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THE RÔLE OF THE Three Types OF TUBERCLE BACILLI IN HUMAN AND ANIMAL TUBERCULOSIS.

A Lecture delivered at the Royal Institute of Public Health on Feb. 8th, 1922,

BY LOUIS COBBETT, M.D. CAMB., F.R.C.S. ENG.,
LECTURER IN PATHOLOGY, UNIVERSITY OF CAMBRIDGE.

THE advance of morbid anatomy in the early half of the nineteenth century—especially the work of Bayle and Laennec in laying bare the structure of tubercles—revealed the identity of the morbid process in men and animals, and laid the foundation of the doctrine of the unity of tuberculosis. It was therefore natural for Koch, when he discovered the tubercle bacillus, to conclude that there was but one kind of bacillus for all varieties of tuberculosis, both in men and animals. Soon after Koch's publication appeared in 1882 the avian tubercle bacillus was shown by Nocard and Roux in France, and Maffucci and Rivolta in Italy, to be a distinct type. Koch himself readily recognised the new discovery, but some time elapsed before it was accepted generally.

While the avian type of tubercle bacillus attained recognition quite early, many years were to elapse before the existence of two types of mammalian tubercle bacilli was even suspected. It was odd that Koch, in spite of the comprehensiveness of his researches, failed to detect the differences, both in cultural characters and in comparative virulence for certain animals, which differentiate the human from the bovine type of tubercle bacilli. For he worked largely with rabbits; and already, 14 years earlier, Villemin[1] had detected the difference in virulence for this species of material taken from human and bovine sources. Klein[2] also, before the publication of Koch's full paper in 1884, had called attention to the same facts. But no notice was taken of this at the time, and not until the dawn of the present century did American observers, led by Theobald Smith, cautiously approach such a distinction.

DISTRIBUTION OF THE THREE TYPES.

At this moment Koch astonished the world by his announcement in London in 1901 that human tuberculosis differs from bovine and cannot be transmitted to cattle; and that bovine tuberculosis is not transmitted to man, or is at most so seldom transmitted that it can be safely ignored.[3] From the extensive and official investigations which were immediately commenced, as the result of this announcement, in England, America, and Germany, the three types of tubercle bacilli have emerged. They are known, respectively, as the human, the bovine, and the avian, but their distribution among the various species of animals is not so simple as their names imply, for the human type is not confined to man or even to mammals, nor the avian type to birds, while the bovine type occurs in a large variety of animals, not excepting man himself.

The subject of this lecture is the rôle of the three types of tubercle bacilli in human and animal tuberculosis, but the question of the reality of the distinction between the types, and their stability, must also be discussed; for without clear ideas on these points conclusions cannot be drawn from the types found in various patients. I can, however, only touch very briefly on these topics, and I shall have to dismiss the avian bacillus with very few words, since it scarcely touches on the domain of human pathology.

SHARPNESS OF DISTINCTION BETWEEN THE TYPES.

For the purpose of differentiating the types, the differences of size and structure, which in bacteriology we rather grandiloquently style "morphological," are of no value whatever. Cultural characters and comparative virulence for certain test animals are alone of importance. The cultural character which distinguishes the human from the bovine type is greater luxuriance of growth on all culture media, especially on those which contain glycerine. The human type, consequently, is said to be eugonic, the bovine dysgonic; the human type, moreover, develops a yellowish colour on certain samples of ox serum. In attempting to estimate the luxuriance of growth of a given strain allowance must be made for its adaptation to conditions of growth on artificial culture media. All tubercle bacilli grow sparsely at first when taken from the animal body; in successive subcultivations they slowly and steadily improve in capacity for growth. The capacity for growth of a given strain cannot therefore be correctly estimated until it has been kept for some months under observation and grown on a variety of media. Moreover, different strains of any one type seem to differ somewhat in their innate capacity of growth, so that the more vigorous bovine strains approximate to the less vigorous strains of human type; there is thus a tendency toward the production of a continuous series, bridging the interval between the most eugonic and the most dysgonic strains. There is, however, I believe, no true overlapping of types in this respect, but, on the contrary, a distinct gap between them. Nevertheless, the correct classification of types by their cultural characters is not entirely without difficulty, and calls for patience and experience.

The test for specific virulence is usually limited at the present day to inoculation of the rabbit. Calves, necessary at one time to establish the existence of the types, are no longer indispensable, and are too costly for ordinary use. The goat is a very convenient substitute, but the rabbit will prove sufficient if attention is paid to the variability of its power of resisting infection with tubercle bacilli of human type. Though the rabbit, in general, is refractory to infection with this type of bacillus, in a good many individuals some amount of chronic tuberculosis may be set up by it in lungs and kidneys; in exceptional instances the lesions may be so considerable that inexperienced observers may, I think, be deceived into the belief that they are dealing with a bacillus of bovine type. Very occasionally an exceptionally susceptible rabbit may develop a progressive and fatal tuberculosis as the result of an injection of tubercle bacilli of human type; I have twice seen this occur. When it does happen it may be very misleading; but the true nature of the case will be indicated by the fate of other rabbits, if any have been inoculated with the same virus, and conclusive proof may be obtained if the virus be passed on from the fatal case to another rabbit, and minimal lesions, or none at all, develop in this animal. On account of this occasional failure in the resisting power of rabbits to infection with tubercle bacilli of human type it is desirable that two or more individuals should be inoculated on each occasion.

In the foregoing I may, perhaps, have given the impression that the determination of type of tubercle bacilli is so difficult as to be a matter of uncertainty and that the literature of the subject is strewn with errors of this kind. If so I have made too much of the difficulties; the latter exist, but patience and experience are quite able to overcome them in the ordinary case. These difficulties are, of course, increased in dealing with abnormal strains, which either possess the limited virulence of the human type without its luxuriance of growth, or are endowed

[1] In the account of his researches published in 1868 Villemin writes: "At first we were inclined to regard this difference as fortuitous, but subsequent experience led us to conclude that the tubercle of the bovine race inoculated into rabbits possesses a much greater activity than that obtained from man." Études sur la Tuberculose, p. 538.

[2] Thirteenth Rep. Loc. Gov. Bd., 1883, p. 177.

[3] Trans. Brit. Congr. on Tuberculosis, 1901, vol. i., p. 20.

with the virulence of the bovine type, but grow more copiously. Fortunately, such strains are only met with very rarely.

THE PROBLEM OF INTERMEDIATE MAMMALIAN STRAINS.

Dysgonic strains of lower virulence than the standard virulence of the bovine type, such as we have just spoken of, might, at first sight, appear to stand midway between the two mammalian types. But this is not the case; their virulence is not really like that of the human type, though it may be so low for the rabbit that it approximates to that of the human type for this animal; for the guinea-pig and monkey it is depressed also. There is, therefore, none of that discrimination between the rabbit and the guinea-pig which is so characteristic of the human type, but rather an equality of virulence for these two animals which, though lower than that of the bovine type, is thus shown to be of the same quality. Such strains, then, reveal themselves as being attenuated strains of bovine type, and stand in no true sense intermediate between the types.

A good many strains of tubercle bacilli as eugonic as the human type, and yet virulent for calves and rabbits like the bovine type, have been raised in culture. But many of these strains have been shown by passage experiments to be mixtures of the two standard types; and typical human and bovine strains have even been isolated from some by cultivation from single colonies. These eugonic-virulent[4] strains, therefore, have been proved to be mixtures, and very probably all really eugonic strains virulent for calf and rabbit are of this kind. We cannot, therefore, admit either these eugonic virulent strains or the dysgonic strains of low virulence for the rabbit to be transitional; I would even go as far as to assert that no truly transitional strains have yet been found.

SUSCEPTIBILITY OF VARIOUS SPECIES OF ANIMALS TO INFECTION.

This question cannot here be treated in any but the briefest manner, yet I cannot wholly pass it over. Table I. is based partly on the result of experimental inoculations, and partly on the natural incidence of disease. The notes appended thereto show that the two do not always run on strictly parallel lines. For want of complete information of either kind it has been found impossible to use the signs indicating susceptibility in a strictly consistent manner. The table must therefore not be taken apart from its context.

Table I. divides the mammals into two groups according to their susceptibility to infection with the human type of tubercle bacillus. To infection with the bovine type all mammals are probably more or less susceptible, and no animal—with the single and doubtful exception of man—is known to be more susceptible to infection with the human type of bacillus than to that with the bovine type of bacillus. A certain group of animals, including man, dog, guinea-pig, monkey, and other foreign mammals, are susceptible to natural infection with both mammalian types of tubercle bacillus. The other group contains practically all our domesticated mammals, except the dog—for example, the ox, sheep, pig, goat, horse, cat, and rabbit. In members of this group the human type of tubercle bacillus when injected causes, as a rule, only local lesions. I have already mentioned exceptions among individual rabbits; concerning the pig I shall presently add something further. This group is sometimes spoken of as the differentiating group.

Avian Infection.

It is curious that the rabbit is almost the only mammal which shows any great susceptibility to infection by the avian type of bacillus. It can easily be infected experimentally with this bacillus, and I have known it, when kept in captivity along with fowls, contract tuberculosis from them. The guinea-pig, if injected experimentally with large doses of avain bacilli, develops a disease in which tubercle bacilli occur in large numbers, in spleen and other organs, without causing any caseation or tubercle formation. The rat and the mouse can also be infected experimentally with avian tubercle bacilli, and there is some reason to think that they may occasionally become spontaneously affected with it, and so be the means of spreading infection from one poultry-farm to another. After intraperitoneal injection with large doses of any of the three types of tubercle bacilli rats slowly develop a chronic and peculiar type of disease, characterised by the inconspicuousness of the lesions, but with all the great organs swarming with multitudes of tubercle bacilli. The donkey is the most resistant to tuberculosis of all our domesticated mammals. Among birds, swans, geese, and ducks are resistant.

TABLE I.—*Susceptibility of Certain Animals to Infection with the Three Types of Tubercle Bacilli.*

Susceptible to—	Species of animal.	Severity of disease caused by three types of T.B.		
		Human.	Bovine.	Avian.
General infection by bovine type.	Ox, goat, cat	±	+ +	0
	Pig	±	+ +	±
	Horse (*a*)	0	+	0
	Rabbit (*b*)	∓	+ + +	+ +
Infection by both bovine type and human type	Guinea-pig	+ + +	+ + +	Y
	Dog (*a*)	+	+	0
	Man	+ +	+	0
	Anthropoid apes and other monkeys	+ + +	+ + +	0
	Other wild mammals in captivity	+ +	+ +	?
	Parrot and cockatoo	+ +	+ +	+ +
	Rat (*c*); mouse	+	+	+
Insusceptible to either type	Fowl, and other domestic birds	0	0	+ +

± A local lesion caused at the seat of inoculation, and disseminated lesions in the lungs, sometimes fatal, after large intravenous injections.

± Localised tuberculosis (spontaneous).

∓ Some general disease caused in exceptionally susceptible individuals after subcutaneous injection.

+, + +, + + + Various degrees of progressive tuberculosis.

Y The type of disease described by Yersin, without tubercles or necrosis.

(*a*) Spontaneous tuberculosis relatively uncommon. Difficult to infect artificially.

(*b*) Extremely easy to infect artificially, but seldom if ever tuberculous in its natural state.

(*c*) Spontaneous tuberculosis is rare. After intraperitoneal injection of very large doses rats succumb slowly to a general infection which approximates to the Yersin type of the disease.

Foreign Animals.

Another curious point is that foreign animals kept in captivity seem to be infected at least as often with the human as with the bovine type of bacillus. The former type has been found in many species of monkeys and antelopes, and in elephants.[5] The case of the parrot is instructive. When kept as a pet it not infrequently develops tuberculosis, and is then commonly found to be infected with the human type of bacillus. In zoological gardens, on the other hand, if it suffers from this disease, the avian type of bacillus is generally the cause of the mischief. At the same time the comparative experiments of F. Griffith have shown that, when tested by inoculation, the bovine type of bacillus is somewhat more virulent for the bird than the two others. Clearly, then, whether the parrot becomes infected with one type of tubercle bacillus rather than another depends more upon opportunity than upon any difference in the virulence of the types for the species of animal.

[4] Virulent, that is to say, for the calf, rabbit, goat, &c., for which animals the human type of bacillus has low virulence.

[5] The camel in Egypt, like other domesticated mammals, when tuberculous, seems to be infected with a bovine type of bacillus (Mason).

The Dog.

Although the dog possesses considerable power of resisting tuberculosis its case is somewhat similar. Both mammalian types of tubercle bacilli are capable of infecting this animal. The dog which scavenges for itself in the streets, and the pet dog of a consumptive patient, when they suffer from tuberculosis, are usually infected with the human type; the tuberculous dog of a butcher is likely to be infected with the bovine type. Here, again, opportunity for infection with one type of tubercle bacillus is more important than differences of virulence for the animal of the types themselves. Under no circumstances, however, does the avian type infect the dog.

COMPARATIVE VIRULENCE FOR MAN OF HUMAN AND BOVINE TYPES.

These remarks introduce the question whether the bovine type of tubercle bacillus is more or less virulent for man than the human type. At first sight it might seem, from the fact that the bovine bacillus is only found in a small proportion of fatal cases of human tuberculosis—cases confined, moreover, to very young children whose susceptibility might be supposed to be greatest—that the bovine type of tubercle is for man of considerably lower virulence than the human. But is this really the case? A. S. Griffith thinks that it is not. It might be suggested that if comparative inoculations were made the bovine type would prove a little more virulent for the human being, as for the monkey or the guinea-pig. It has been pointed out that it is easier to infect by the aerial route than by the alimentary route; that the human type of tubercle bacillus has a practical monopoly of this easier route, while the bovine type has no chance of infecting except by the more difficult route of the alimentary canal; consequently the bovine type succeeds, as a rule, only in young children, when susceptibility is high and milk, the chief carrier of bovine bacilli, is taken in large quantities. I think this line of argument is worthy of serious consideration, but the question is a difficult one, and it cannot be fully discussed here.

No attempt is made to indicate in Table I. the relative intrinsic virulence for man of the two types of mammalian tubercle bacilli, for on this head we possess none of the experimental evidence gained in the cases of many of the lower animals. We can, therefore, only record the natural incidence of the two kinds of tuberculous infection, unaided by any laboratory investigation. Thus in the line relating to man, two stars have been placed in the "bovine" column and three in the "human." This must not be taken as prejudging the question of the comparative virulence for man of the two types of bacilli, but merely as indicating the extent to which the two types affect him under existing conditions. In the case of other animal species, however, where the virulence has been measured by sufficient comparative experiments, the table aims at indicating the intrinsic virulence of each type of bacillus for the species of animal in question. For example, the bovine bacillus is credited in the table with high virulence for the rabbit and the avian bacillus with somewhat less; although, so far as I know, the rabbit never, under perfectly natural conditions, suffers from tuberculosis. The virulence of the bacilli for this species has, however, been put beyond question by innumerable experiments.

RELATION OF INTRINSIC POWER OF RESISTANCE TO NATURAL LIABILITY TO DISEASE.

The case of the rabbit shows us that high susceptibility, as revealed by experiment, does not necessarily go hand in hand with great liability to a given disease under natural conditions of existence. The rabbit, which I believe never suffers from tuberculosis in wild life, has been shown by experiment to be exquisitely susceptible to infection with the bovine type, not less so than the guinea-pig itself—and that, too, when the bacilli are given with food. Yet it successfully avoids infection, though it must often feed on pastures grossly contaminated with bovine tubercle bacilli from the droppings of tuberculous cattle. It owes its immunity, I believe, to its fastidiousness. It is a delicate feeder, never greedy, never in a hurry for its food, and probably possesses—to judge from the muscular activity of its nostrils—a very acute sense of smell.

The rabbit is an extreme case of the kind. The goat and the sheep also commonly escape tuberculosis, although they are highly susceptible to artificial inoculation. They, probably, are not brought much into contact with other tuberculous animals. At the opposite pole to the rabbit is the dog with its voracious appetite. Tuberculosis in the dog is not very uncommon. Opportunities for infection abound. But its natural powers of resisting tuberculosis are high, and while it succumbs occasionally to the naturally acquired disease, it is difficult to infect experimentally; most of the successful attempts having been obtained only by introducing large doses of infective material into the peritoneal cavity of young puppies. To put the case of these two species shortly: the rabbit escapes tuberculosis in spite of extreme susceptibility, the dog succumbs occasionally in spite of high powers of resistance.

The pig is of exceptional interest. It is the only one of the larger domesticated mammals clearly shown to be susceptible to infection by all three types of tubercle bacilli. Its susceptibility to the types other than the bovine is, however, low, for in all cases found, so far, to be caused by bacilli of avian or human type, the disease has been strictly limited to the submaxillary lymphatic gland.[6] This raises the question why this gland is susceptible beyond that of the other cervical lymphatic glands of the pig. It may be that the portal of entry in these cases of localised tuberculosis is the teeth of the lower jaw, and it is an interesting point, in this connexion, that the pig is said (for I cannot speak with any certainty) to be almost the only domesticated mammal that suffers at all commonly from dental caries.

STABILITY OF TYPE OF TUBERCLE BACILLI.

Are the types stable, or may they be changed into one another on a suitable change of host? Does, for example, the human type of bacillus change into the bovine type of bacillus by cultivation in the body of the ox, or the bovine type change into the human type when it lives in man? This point is of great practical importance; unless we can assume stability, we obviously cannot form any true estimate of the part played in human tuberculosis by infection from the cow—if bovine bacilli change their type in the body of man then infections from bovine sources must be far more numerous than the findings of bacilli of bovine type in man would indicate. At one time Nocard came to the conclusion that the type of bacillus changes with a change of host; but it is now certain that such change, if it occurs at all, does not take place with regularity or certainty. Many "passage" experiments with tubercle bacilli of human type have been carried through long series of calves without the slightest change in the bacillus, and the bovine type of bacillus has been found in man in cases of tuberculosis of very long standing—for example, in one of Griffith's cases, in which lupus had existed for 50 years. Thus, if a change of type takes place it does so capriciously, without any obvious reason. Many experiments have been made; the results of different observers have been much the same, but the conclusions drawn from them are different. To take only experiments in which tubercle bacilli of human type have been passed from calf to calf during a period of months or a few years: many such experiments have resulted in the bacillus coming out in the end unaltered, but in some the strain last isolated has been one of bovine type. The question

[6] Tubercle bacilli of human type alone have been found in the pig four times, and those of avian type alone 48 times.

then arises—is this a modification of type, or merely a *substitution* of one kind of bacillus for the other? Some observers have been satisfied that modification has occurred, but others have interpreted such results differently, pointing out that spontaneous infection with the bovine type of tubercle bacillus is very common in cattle, and that it is only to be expected therefore that, in passage experiments through several calves, the results occasionally should be complicated by spontaneous tuberculosis; and, as a matter of fact, the cases of apparent change of type have become less frequent when the conditions of the experiments have been improved. This seems to me the sensible view.

The enormously greater frequency with which strains of bovine bacilli are found in very young children as compared with older persons makes it tempting to believe that bovine bacilli are converted into bacilli of human type in the body of man; but, in my opinion, this conclusion is not warranted by experimental evidence. The question is, perhaps, still open, but the balance of evidence is, I think, strongly on the side of stability. It will therefore be assumed, in what follows, that the types of bacilli are stable, so that when we find in a patient a tubercle bacillus of human type we may be sure that it has not come from a cow, and that the extent of bovine infection in man is to be fully measured by the extent to which tubercle bacilli of bovine type have been found in him.

RELATIVE EXTENT OF BOVINE INFECTION OF MAN.

If this assumption is sound, but not otherwise, we may rely that the analysis which appears in Table II. truly represents the relative extent to which infection has come from the cow in each variety of human tuberculosis dealt with. The table is based as far as possible on the results of investigations concerning 1068 cases of human tuberculosis recorded by those who carried out the practical work of the last Royal Commission on Tuberculosis, collected in 1920 by Griffith,[7] and consisting very largely of his own work. The methods used for differentiation were the same throughout, and were those adopted by the Commission, and as the cases concerned were almost all English ones, the series is a self-consistent and homogeneous one. To these are appended a few results from other sources.

It was at first my intention to combine the results obtained in Great Britain, Germany, and America, and attempt to give world figures; but as I proceeded I found myself obliged to make so many reservations and exclusions that I abandoned the attempt. The difficulty was mainly due to the excessive proportion of bovine infections found by two observers in Scotland in the case of cervical gland tuberculosis and tuberculosis of bones and joints respectively. Smaller discrepancies, sometimes of an opposite kind, were found in the results obtained in other countries—e.g., Germany and America. But, on the whole, the differences due to this change of plan are only small ones.

The chief differences are as follows: In primary pulmonary tuberculosis world figures give a proportion of bovine infections, in nearly 1000 cases, of 0·4 per cent., instead of the 1·3 per cent. recorded among English cases. This is excluding two cases of mixed infection when the bovine bacillus was, in all probability, a "harmless lodger," introduced by milk into a lung already diseased by the human type of bacillus. In cervical gland tuberculosis Mitchell, in Scotland, found 93 per cent. of bovine infections in children under 5 years, and 87 per cent. in those between 5 and 13. Park and Krumwiede's and Lewis's figures from America give 73 per cent. and 42 per cent. at similar ages. German figures, inconsiderable in number, give a proportion of 36 per cent. and 33 per cent. American figures, therefore, as the table shows, stand between those of England and Scotland. Thus there probably is a very considerable difference in the proportion of bovine infections in different countries.[8] To test this Griffith examined 14 cases under 16 years of age from Scotland. Among these he found a proportion of 71·4 per cent. of bovine infections, which, though not so high as Mitchell himself had found (90 per cent.), was considerably higher than he had found among his cases from England (55·5 per cent. at similar ages).

In bone and joint tuberculosis Fraser in Edinburgh got results comparable to those of Mitchell in cervical gland tuberculosis. Fraser found 68 per cent. of bovine infections in children under 5 years, and 25 per cent. in those between 5 and 16. Griffith also examined a few Scotch cases of the same kind, and found a proportion of bovine infections considerably higher than those of his English series, though not so high as Fraser had found. Griffith's percentages for these cases were 37·5 under 5 years and 22·2 from 5 to 16.

TABLE II.—*Rôle of Human and Bovine Types of Tubercle Bacilli in Various Kinds of Human Tuberculosis in England and other Countries.*

Group.	Type of tuberculosis.	Types of tubercle bacillus.			
		All ages England: Percentage.		Other reports Percentage.	
		Human.	Bovine.	Human.	Bovine.
1	Pulmonary ..	98·7	1·3	—	0·4*
	Bronchial glands.	94·5	5·5	—	—
2	Abdominal ..	50	50	—	—
	Cervical glands ..	54	46	—	90·6† / 71·4‡ / 53·0‖
3	General	84	16	—	—
	Meningitis ..	82	18	—	—
	Bones and joints.	80	20	—	58·6§ / 29·6‡ / 21·6*
	Genito-urinary ..	82	18	—	—
4	Lupus	50	50	—	—
	All fatal cases ..	93·5	6·5	—	—

* World figures. † Mitchell (Scotland). ‡ A.S.G. (Scottish cases only). ‖ U.S.A. § Fraser (Scotland).

Table II. is intended to show the relative parts played by tubercle bacilli of human and bovine type in the four following clinical varieties of human tuberculosis, namely:—

Group 1.—Primary pulmonary tuberculosis and primary bronchial gland tuberculosis—a group which consists, in all probability, of cases caused by aerial infection.

Group 2.—Intestinal mesenteric gland, and peritoneal tuberculosis—in other words, primary abdominal tuberculosis, together with tuberculosis of the cervical lymphatic glands—that is to say, cases probably to be attributed either to infected food (milk), or to air-borne tubercle bacilli (from cases of pulmonary tuberculosis) which have stuck to the pharyngeal mucus, and which have either been swallowed or have penetrated locally.

Group 3.—General tuberculosis, tuberculous meningitis, bone and joint, and genito-urinary tuberculosis; that is to say, cases of disease caused by dissemination of the bacilli by the blood-stream in greater or lesser numbers.

Group 4.—Lupus and other forms of tuberculosis of the skin; probably caused by direct infection.

In Group 1 the proportion of bovine infections is negligible—little more than 1 per cent. in primary

[7] Jour. of Pathol. and Bacteriol., xxiii., p. 129.

[8] The late Sir G. Sims Woodhead, in his address to the Congress of Hygiene and Demography in 1912 already recognised this: "I believe," he said, "that even in different parts of Great Britain tuberculosis differs in type, and that bovine and human tuberculosis manifest themselves in different proportion .... say in Edinburgh and in London, in Manchester and in Cambridge, and I am satisfied that, if in a small country like ours there are these local variations, they may also be demonstrated in other countries covering greater areas."

pulmonary tuberculosis, and in bronchial gland tuberculosis out of 17 cases examined only one has yielded bovine bacilli—and that a case with no visible tuberculosis in these glands or elsewhere. In Group 2, including abdominal tuberculosis and tuberculosis of cervical glands, the proportion of infections with tubercle bacilli of bovine type is much higher—in round numbers 50 per cent. at all ages.

From these facts several important inferences may be drawn. The frequent occurrence of bovine tubercle bacilli in cervical glands and their rarity in bronchial glands are strongly opposed to the view that tubercle tracks downwards from gland to gland, extending in this way from the neck to the thorax and so to the lungs. In order to hold this view we should have to assume that only tubercle bacilli of human type can track in this way.

Again, the fact that bovine tubercle bacilli are so frequent in mesenteric glands and so rare in the lungs is in opposition to Calmette's view that pulmonary tuberculosis is commonly caused by tubercle bacilli absorbed through the intestinal mucous membrane, and carried by the thoracic duct and the innominate vein to the right side of the heart, and so to the lungs. If this were the common channel of infection we should expect to find the same proportion of bovine infections in pulmonary as in abdominal tuberculosis. Lastly, the fact that bovine tubercle bacilli have frequently been found in abdominal and cervical tuberculosis (that is, in cases arising from infection through some part of the alimentary canal) and seldom in the lungs is easily explained on the ground that human tubercle bacilli alone are sprayed into the air, therefore alone have a chance of entering the lungs directly, while bovine tubercle bacilli, being limited to food substances, can only infect man through the alimentary canal. The inhalation theory of the origin of pulmonary tuberculosis thus receives strong support.

Passing now to Group 3 we see that in each of its sub-groups, general tuberculosis, meningitis, tuberculosis of bones and joints, and genito-urinary tuberculosis, the proportion of cases in which bovine bacilli have been found is nearly the same. Perhaps if we had sufficiently extensive investigations they would come out quite the same. These cases almost certainly arise from some small primary focus elsewhere, usually in a lymphatic gland and often entirely unsuspected. Probably both aerial and food infections contribute to this group in the same proportion as they occur in the form of primary infections. Twenty per cent. of bovine infections may, therefore, seem high for these blood-borne infections, but we must remember that the majority of such cases as fall into Group 3 occur in early life when infections through the abdominal route with its large proportion of bovine bacilli are far commoner than they are later.*

In cases of lupus it is, at first sight, surprising to find so high a proportion of bovine infections as 50 per cent. Lupus usually arises on the face, and, to a lesser extent, on the buttocks, to which tubercle bacilli may be considered to have access after passing through the alimentary canal. It may therefore be considered that usually, when it is not secondary to ulceration of a caseous gland, it is caused by direct application of tubercle bacilli to the skin. Now bovine bacilli in milk and tubercle bacilli of human type which, whether dry or moist, get into the air from consumptive patients have, probably, about an equal chance of getting to the skin of the face in numbers sufficient to cause infection. Hence it is that the proportion of infections with one type of mammalian tubercle bacillus is about equal to that of the other. A large portion of the strains of tubercle bacilli derived from lupus are of attenuated virulence, but not all; and it is more probable that tubercle bacilli become attenuated in the skin than that lupus is caused by attenuated bacilli. For if the latter were the case we should have to suspect the horse or other cases of lupus as the most probable sources of supply of the attenuated bacilli. But there is no reason to suppose that lupus is specially common among those who have to do with horses, or that it is usually caught from a patient suffering from the same disease.

* In 1911 out of 100 children under 5 years who died of tuberculosis of any kind, 52 were attributed to general tuberculosis, meningitis, and bone and joint tuberculosis, and only 16·3 to pulmonary tuberculosis. Reg. Gen. Rep.

"*Bovine*" *Proportions of Total Tuberculosis Death-rate.*

The last question that remains for consideration is: What share in the total death-rate from all kinds of tuberculosis is attributable to the bovine type of tubercle bacillus. It is obvious that, in answering this question, it will not do to add together all the cases of tuberculosis in which the type of bacillus has been investigated and record the percentage in which bacilli of bovine type have been found; for these cases have been selected, very largely, from those kinds of tuberculosis in which the bovine bacillus has a large share, while pulmonary tuberculosis, in which bovine bacilli are rare, and which causes 79 per cent. of the deaths from tuberculosis of all kinds, is not proportionately represented. One has rather to take each kind of tuberculosis separately, determine the percentage of cases in which bovine bacilli have been found in it, multiply each of these figures by the number which gives the percentage of the total mortality from tuberculosis caused by that variety of the disease, and divide by 100. In this way we arrive at the number of deaths in every 100 from all kinds of tuberculosis contributed by each kind of tuberculosis and caused by bovine bacilli. This calculation is set out in Table III.

TABLE III.—*Showing Proportion of All Deaths caused by Tuberculosis due to Bovine Type of Bacillus, England and Wales.*

Varieties of tuberculosis.	Deaths in 1919.	Percentage of all deaths from tuberculosis.	Percentage of each kind caused by bovine T.B.	Contribution in each variety to total mortality from tuberculosis made by bovine T.B.
Pulmonary, acute and chronic	36·662	79	1·3	1·04
Meningitis	3·696	—	—	—
Disseminated	1·789	—	—	—
Spinal column	0·663	—	—	—
Joints	0·376	—	—	—
Other organs	0·629	—	—	—
Total	7·153	15·4	(say) 18	2·8
Peritoneum and intestines	2·410	5·2	50	2·6
Total	50·225	—	—	—
Percentage of total mortality from all kinds caused by bovine T.B.	—	—	—	6·44

The result shows that of the deaths attributed to tuberculosis of all kinds about 6·5 per cent. are attributable to bovine bacilli, and therefore to infection coming from the cow, probably in the immense majority of cases through milk.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL.—Lord Howard de Walden presided at the annual meeting on May 9th. The report shows that during the past year 1729 patients were treated in the hospital, 2087 were attended in their own homes, and 4603 patients were seen at the antenatal and child welfare departments. During the year 58 medical students and 47 qualified practitioners attended a course of practical midwifery, and 164 women were trained in midwifery and maternity nursing. Students were received from nearly all the London medical schools and from most of the provincial and Scotch schools. The financial position of the hospital was serious and an earnest appeal was made for additional support.

A CASE OF INTERMITTENT COMPLETE HEART-BLOCK

OBSERVED FOR TWELVE YEARS.

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THE case here recorded shows, first, how remarkably chronic and latent an infective non-syphilitic endocarditis can be, and, secondly, presents several points of interest in connexion with the heart-block.

History.

J. C., a male whose age at death was 58, had no symptoms connected with his heart until he was 44. Up to that time he had led an active physical life, working as a warehouseman. He had not had rheumatism or syphilis, but had suffered from small-pox (aged 4), gonorrhœa (aged 20 and again at 24), and gastric ulcer (aged 40). His first heart symptom occurred in 1906. One day, when in ordinary health, he started for a bicycle ride, but after going for about two miles along a level road, became so short of breath that he had to give up and return home. This incident did not, however, impress him to the extent of making him seek medical advice, and he kept in his ordinary health until a year later, when he had a sudden attack of "giddiness" in which he fell down. For this he did consult a doctor, who diagnosed "cardiac irregularity" and gave him treatment. As, however, he seemed to be getting worse in spite of treatment, suffering from palpitation, shortness of breath, and fainting fits in which he lost consciousness, he later went to the Heart Hospital, where he was seen for the first time on Dec. 17th, 1908, by Dr. C. W. Chapman.

Condition on First Admission to Hospital.—Pulse, 40 per min., cardiac dullness somewhat enlarged, the left border extending outside the nipple line, systolic and diastolic murmurs present in the aortic region, and a systolic over the mitral. A diagnosis of Adams-Stokes disease with double aortic lesion was made, and he was treated with nitro-glycerine and strychnine.

Course of Case Under Observation.

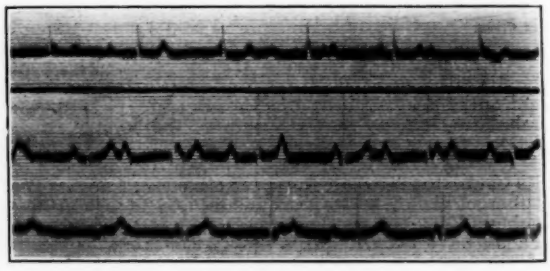
Four weeks later (Jan. 14th, 1909) his pulse-rate was 60, and from then until the end of June he declared his symptoms improved, having only occasional discomfort over the heart, which a belladonna plaster always sufficed to relieve. By August 22nd his pulse-rate had again fallen to 48, and it varied between this and 58 until December, when a count of 60 was made. During this period he had a few attacks of "dizziness" and his dyspnœa was worse. About this time one of us (S. R.-W.) took an apical tracing of his heart in the left lateral position, which showed quite clearly that auriculo-ventricular dissociation was complete. Unfortunately this tracing cannot now be found.

He was again admitted to the Heart Hospital from Jan. 6th, 1910, to March 5th, because of further fainting fits with complete loss of consciousness. At this time he had a well-marked systolic murmur, and a soft aortic systolic, but no diastolic murmur was heard. While in hospital his pulse-rate usually ranged between 40 and 52, but on a few occasions was as rapid as 64, and once reached 72. He was twice dizzy while sitting up in bed, but there was no loss of consciousness.

From April to July, 1910, he was better and his heart rate was frequently normal. An X ray examination in June, 1910, showed "No abnormal shadows visible; the area of heart and great vessel shadows about normal." In August of this year, however, his pulse-rate again fell to 48. During 1911 and the first half of 1912 he had some dyspeptic symptoms, but beyond occasional pain in the chest his heart did not trouble him, and his pulse-rate varied from 62 to 82. In July, 1912, he was transferred to one of us (S. R.-W.). His weight was 12 st. 9 lb.; pulse-rate normal; squeaky systolic at apex, no thrills; soft systolic at base; doubtful diastolic but no Duroziez murmur; no capillary pulsation and pulse not of Corrigan character.

Electrocardiographic Pictures of Condition.—On March 17th, 1913, an electrocardiogram was taken with a Bock-Thoma oscillograph. The heart rate was 66, and the deflections of normal character. The P. waves were well marked and normally spaced, the P.R. interval being almost exactly 0·2 second. He was given mist. gent. alk. with pot. brom., gr. x. t.i.d., and stated that this relieved him greatly. He was seen regularly once a fortnight, but except for a little dyspepsia in September, 1914, there was no change in symptoms or signs until January, 1915, when the attacks of palpitation and dizziness recurred. On Feb. 23rd, and again on April 13th, 1915, electrocardiograms were taken, both of which showed typical complete heart-block with ventricular rates of 51 and 49 respectively (Fig. 1). During the

FIG. 1.



Electrocardiogram, Feb. 23rd, 1915. Complete auriculo-ventricular dissociation with ventricular rate 51 per min.

rest of 1915 and most of 1916 there was practically no change. In April, 1916, his case was mentioned in a lecture published in the *Practitioner*. In this his condition of block was contrasted with that of a case of simple bradycardia, in which the pulse-rate and physical signs were in other respects the same. Towards the end of 1916 he said he was better, and an electrocardiogram taken on Nov. 14th, 1916, was found to be normal except for very slight prolongation of the P.R. interval, the heart rate being 75. Nothing noteworthy happened during 1917, and another electrocardiogram taken Nov. 27th, 1917, was again of normal type (Fig. 2).

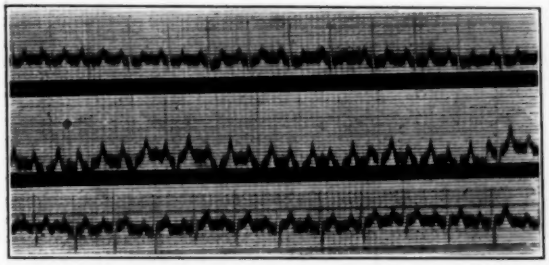
During 1918 and 1919 he remained practically the same. On occasions he had a little pain in the heart, and sometimes this extended down the arms, more especially the left arm, but this was so slight that a belladonna plaster always sufficed to relieve it. For the whole period from 1912 to 1919, almost without intermission, he took the alkaline gentian mixture with bromide, and though many attempts were made to omit the bromide, he always detected the omission, and complained of feeling worse without it.

Final Readmission to Hospital.

At the beginning of September, 1920, he came to surgical out-patients' at King's College Hospital on account of an abdominal tumour; this was considered by Mr. Arthur Edmunds to be inoperable carcinoma of the cæcum, and, in view of the patient's bad general condition and history of heart-block, he was admitted under one of us (H. W. W.). The only addition made to the story given above was that earlier in 1920 he had been given gas for a dental extraction and "had much trouble in coming to."

On admission, Sept. 11th, 1920, the patient looked anæmic, worn, and wasted, his general appearance being typical of the cachexia of malignant disease. His weight was 9 st. 10 lb. A hard fixed tumour was felt in the position of the cæcum, but no signs of secondary metastases could be made out. Save for this tumour, the cachexia, old scoliosis, and some emphysema, no abnormalities were discovered except

FIG. 2.



Nov. 27th, 1917. Normal as on Nov. 14th, 1916.

in the heart. The pulse was soft and the systolic pressure low, 90 to 95 mm. Hg. The arterial wall was considered normal for the patient's age. No irregularity of time or volume was detected at any time. In view of the fact that complete heart-block was present, the pulse-rate was remarkable; 42 charted observations during three weeks in hospital gave an average rate of 73 per minute, with a minimum of 56 (on one occasion), and a maximum of 88 (on three occasions). The apex beat of the heart was well localised, situated in the sixth interspace in the mid-clavicular line. A systolic thrill could always be felt in this region. No thrill was felt at the base at first, but later a faint thrill was felt in the aortic area. Relative cardiac dullness was enlarged to the left, extending ¼ of an inch external to the apex beat. A well-marked musical mitral systolic murmur was heard. This was conducted to the axilla and audible at the back. The second sounds could not be heard at the base. In the aortic area a harsh systolic murmur was present, showing good conduction up into the carotids and audible as far out as the anterior axillary line on the right side, and over the pulmonary area to the left. A doubtful aortic diastolic murmur was heard on one occasion. X ray examination showed some enlargement of the heart, and that it lay rather horizontally in the thorax. The aortic shadow was noted to be rather prominent to the left, but this was not regarded as pathological. The blood gave a completely negative Wassermann test on two occasions.

Electrocardiograms were taken on three different occasions, the result being exactly the same each time (Fig. 3). The ventricle was always completely regular, and the ventricular complex of normal supraventricular type. The auricle, however, showed typical fibrillation, and it was evident that these fibrillation impulses were completely blocked.

Fatal Termination.

During the three weeks patient remained in hospital, his symptoms, weakness, anorexia, and a tendency to flatulent dyspepsia were such as could well be accounted for by the growth and consequent cachexia. Once or twice he complained of having had sensations of giddiness, but these were so slight that he never drew attention to them at the time; in fact he only mentioned them in answer to a leading question. After three weeks, in answer to a question on his part, it was explained that the intestinal growth, being inoperable, could not be cured; and having no severe symptoms calling for palliative treatment, he elected to return home. Death took place at his home some two months later, the actual terminal event being hæmorrhage from a gastric ulcer.

Variation in Condition of Heart-Block.

The important point in this clinical history is the variation in the condition of heart-block. As shown by clinical observation, confirmed by graphic records, periods of complete block alternated with periods when conduction was normal, and these alterations are most easily grasped when expressed in tabular form, thus:—

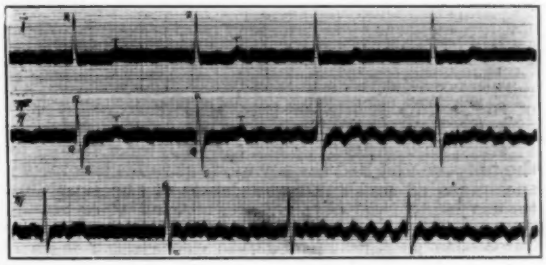
1907, 1908, 1st half...	High degree partial heart-block.
1908, 2nd half	Complete block.
1909, 1st „	Doubtful—probably no block.
1909, 2nd „ 1910..	Complete block.
1911, 1912, 1913, 1914	No block.
1915, 1916	Complete block.
1917, 1918, 1919.....	No block.
1920, 1st half	?
„ 2nd „	Auricular fibrillation and complete block.

Hence the lesion causing heart-block was more or less active from 1907 to the end of 1910. It was then quiescent for four years, but re-awakened into activity in 1915 and 1916. Then it subsided and was only noted again late in 1920, when auricular fibrillation had set in.

Post-Mortem Examination.

The examination was made on Dec. 6th, 1920. The body was wasted and anæmic. A growth involved the whole of the cæcum and was adherent

FIG. 3.



Sept. 11th, 1920. Auricular fibrillation. Ventricle quite regular and ventricular complex of normal supraventricular type. Ventricular rate just under 60 per min.

to neighbouring organs, but no secondary metastases were found; this growth was a columnar-cell carcinoma, showing extensive colloid degeneration. The stomach was distended with blood which had come from a shallow chronic ulcer at the pylorus. The liver was fatty to naked-eye examination and showed slight chronic venous engorgement on microscopical examination. The spleen showed some old perisplenitis.

The arteries were normal; in fact, the aorta looked like that of a much younger man. The heart was moderately dilated and the left ventricle somewhat hypertrophied. The muscle looked pale and fatty, and was soft. Microscopically the individual fibres appeared somewhat larger than normal and were fragmented in places. Many showed brown pigment granules near the nuclei. There was no obvious excess of fibrous tissue in the general myocardium. The tricuspid ring was slightly dilated. On opening the right side nothing abnormal could be seen, the pulmonary and tricuspid valve flaps being healthy and the region of the A.-V. node and bundle appearing perfectly normal. Palpation, however, immediately revealed the fact that there was a nodular calcareous mass lying immediately subjacent to these structures. On the left side the aortic orifice was narrowed, owing to irregular nodular thickening and calcification of the cusps. It just admitted the tip of the little finger (Fig. 4). A calcified mass as large as a pea was present in the posterior flap of the mitral valve, and smaller nodules extended up from this mass towards the aortic valves. To the left of the large mass there was a slit-like ulcer about ¼ inch

long. The anterior flap of the mitral valve was thickened but not calcified. A few small recent vegetations were present near the free margins of both mitral flaps. The chordæ tendineæ were thickened and shortened. In the upper part of the septal wall of the left ventricle there was a nodular calcareous mass about ¼ inch in diameter. This was situated just below the anterior cusp of the aortic valve (Fig. 4) and extended downwards and backwards for half an inch below the left posterior cusp of the aortic valve and towards the mitral valve. This mass infiltrated the septal wall towards the right side, but failed to reach the endocardium. It lay immediately subjacent to the A.-V. node and the main bundle. The right branch of the bundle lay below and in front of it, and it was just posterior to the position of entry of the left branch of the bundle into the left ventricle.

FIG. 4.

Left view of heart. C.A.C. = Calcified aortic cusps. C.M.C. = Calcified mitral cusp, pulled back. C.Ma.S. = Calcified mass in septum, infiltrating through towards A.-V. node and bundle.

Microscopical Changes.—The degree of calcification and sclerosis of the tissues appeared so marked that it seemed doubtful whether it was worth while to attempt to cut sections for microscopical examination. We sought the advice of Sir Arthur Keith on this, and he very kindly not only advised making the attempt, but himself cut out the junctional tissues for the purpose and had the sections cut in his laboratory, specimens at seven different levels of the junctional tissues being thus obtained. These all show similar changes (Figs. 5 and 6). The node and bundle are in immediate contact with a very dense thick mass of fibrous tissue. This mass shows irregular spaces from which calcareous particles have been dissolved out. The tissues of the node and bundle show the effects of chronic inflammation throughout. The small arteries are considerably thickened. This is mainly owing to internal proliferation, but there is also an increase of adventitial connective tissue. There is a general increase in interstitial connective tissue, which is more marked in some parts than in others, and there is some increase of nuclei in this tissue, suggesting that the inflammatory process has not been entirely a matter of past history. This view is confirmed by the striking fact that at one level low down in the main bundle there is a small area of small round-cell infiltration, showing the actual presence of active subacute inflammation. The muscle fibres of the node and bundle have lost striation and appear granular and degenerate. These appearances must to some extent be due to the effects of hardening and decalcification; and the exact degree of allowance that must be made for this appears impossible to estimate.

These changes affected the whole of the A.-V. node and bundle. They were perhaps most marked in the lower part of the main bundle, and about the middle of the node, but the differences between different parts were slight, and it is impossible to point to any one level of the junctional tissues as having borne the brunt of the inflammatory attack.

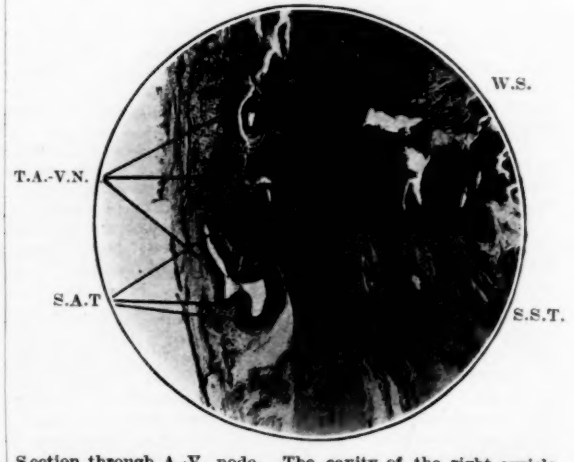
Discussion.

The post-mortem findings are conclusive of the fact that an infective endocarditis had been at work. The negative history of syphilis, the two negative Wassermann examinations, the extensive calcification of the lesion, and finally the healthy character of the aorta itself, rule out syphilis as the infective agent. History of illness is completely negative between the attack

FIG. 5.

Section through lower part of main bundle. Above and to right of bundle dense mass of fibrous tissue with spaces from which calcareous deposits have been dissolved out. Considerable thickening of arteries of bundle. Dark area above and to right of the upper artery is area of active round-cell infiltration. (See text.) R.A. = Wall of right auricle. I.-V.S. = Upper part inter-ventricular septum. A.-V. = Main A.-V. bundle. T.A. = Thickened arteries in bundle. C.D. = Spaces which contained calcareous deposit. C.I. = Area of round-cell infiltration. I.F.T. = Dense inflammatory fibrous tissue. F.T.A. = Fibrous tissue at base of aorta.

FIG. 6.



Section through A.-V. node. The cavity of the right auricle is seen to the left. To the right there is dense fibrous tissue in which some spaces occur from which calcareous deposits have been dissolved out. The small arteries in the nodal tissue are considerably thickened. The muscle fibres appear degenerate. There is general increase in interstitial fibrous tissue, more marked in some patches than in others. T.A.-V.N. = Tissue of A.-V. node; degenerate muscle fibres. S.A.T. = Small arteries thickened. S.S.T. = Dense sclerotic scar-tissue. W.S. = White spaces from which calcareous deposits dissolved.

of gonorrhœa at 24 and the onset of heart symptoms 20 years later, with the single exception of gastric ulcer four years before the latter. Hence we cannot date the onset of the endocarditis; but it is certain that it must have been present for some time and have become fairly extensive before symptoms were produced. Subsequent to this the evidence shows that the inflammatory process was present in varying degrees of activity over a period of 13 years, now advancing and causing complete block, now receding and allowing normal impulses through; and finally, post mortem we find a small microscopic area in the muscle still in a state of active subacute inflammation, and one or two fresh vegetations on the valves. The clinical story, coupled with these pathological findings, certainly suggests an infection which, though now active and now relatively quiescent, had never died out, but persisted for 13 years.

Secondly, it is remarkable that during the last 12 years, when the patient was under frequent observation, sometimes with complete block, sometimes free from block, he was never actually found to be in the transitional stage of partial block. Considerable variation in the pulse-rate was found at different times, but irregularity was never noted subsequent to the occasion when he first consulted a doctor about his heart 13 years before death. Further, the ventricular rates observed at times when complete block was present are noteworthy. Two electrocardiograms taken in 1915 show ventricular rates of 51 and 49 per minute with complete block. In 1920 after auricular fibrillation had set in, three electrocardiograms show ventricular rates of 60 per min., although the perfect regularity of the ventricle proves that all impulses from the auricle were completely blocked; and the clinical records at this time show that an average ventricular rate of 73 per min. was maintained for three weeks, a maximum of 88 being attained on three occasions.

Now these rates are so high for an idioventricular rhythm that they compel speculation concerning the site of origin of the stimuli to which the ventricle was responding. It was conjectured, during life, that the lesion must have produced functional section of the conducting tissues across the A.-V. node, leaving sufficient intact nodal tissue below it to serve as the pacemaker to the ventricle. Post mortem it was hoped that microscopical examination might give information on this point, but unfortunately, as stated above, the changes in the conducting tissues were found to be diffuse, and no particular level can be selected as the most severely affected. The A.-V. node and bundle, lying as they did quite at the periphery of the main septal inflammatory focus, have suffered very much less than the tissue immediately subjacent to them. Their conducting function must have been interfered with in two ways—namely, (1) by transmitted pressure due to inflammatory tension in the underlying focus, and (2) by direct implication in the inflammatory process. Of these two factors we are inclined to think that the first—transmitted pressure—was the more important in producing the clinical events of the case.

If actual inflammation of the conducting tissues themselves had been the direct cause of the complete block in 1908, 1910, and during most of 1915 and 1916, we should have expected to find a degree of scarring of these tissues, not only much more extensive than is seen in these sections, but such as would entirely have prevented any resumption of the conducting function after 1916. We should also have expected the period during which such inflammation was subsiding to have been marked by a state of partial heart-block of such duration that it could hardly have been overlooked. For these reasons we regard actual implication of the junctional tissues themselves in the inflammatory process as having been of minor importance in the production of the heart-block in the earlier stages, and consider that transmitted pressure was the predominant factor. Both, however, must at different times have varied much in degree, and probably also in level. The pathological changes found do not permit us to assert that the variations in ventricular rate recorded on different occasions when complete block was present were due to alteration in the level at which the junctional tissues were being attacked, but we consider this to be the most probable explanation. In the same way we cannot prove that the relatively rapid rate of the ventricle when block was complete, in particular during the final stages, was due to activation from the A.-V. node, but we think that this is far more probable than that the ventricle itself was originating impulses at such a rapid rate.

In conclusion, we wish to express our indebtedness to Sir Arthur Keith for his advice concerning the histological examination, and for his kindness in personally removing the tissues for this purpose. We also feel it only right to record our appreciation of the spirit of the patient, who left directions that we were to be given the opportunity to examine his heart after death.

EIGHT EXAMPLES OF BUNDLE BRANCH LESION IN THE HEART.*

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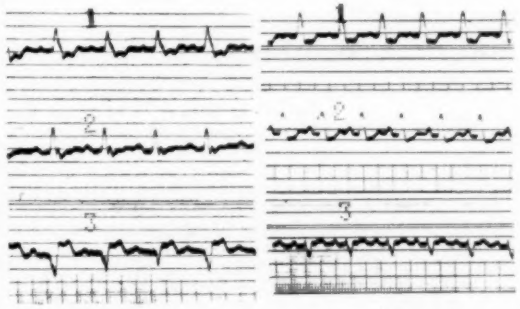
SINCE presenting to the New York Pathological Society 20 typical examples of bundle branch electrocardiograms which were published in the proceedings of the Society, I have collected eight additional examples from about 500 consecutive patients. This gives a frequency of 1·6 per cent., which is about the same as in the previous group of 20 cases. One of the eight patients is particularly interesting, in



Electrocardiograms of Cases F.H.H.D. (typical) and F.O.P.S. (irregular).

that the records taken two and a half years previously showed a normal electrocardiogram. The clinical picture is about the same in the two groups. Some patients had very definite histories of severe attacks of pain, lasting several hours, followed by gradual recovery; in others the onset of pain did not appear so clearly in the history.

The records of these eight people fall into two groups. In the first group of four cases the records are like the electrocardiogram of Case F.H.H.D., and show the typical characteristics necessary to diagnose a disease of one bundle branch which completely destroys the function. The R-waves or S-waves are large and wide and show notches, and the T-waves are large and downward in Lead 1.

The four remaining records are the same as the electrocardiogram of Case F.O.P.S., and are not so typical of this condition. However, they all show marked abnormality in the notching or in the width

* Read before the meeting of the New York Pathological Society, Feb. 8th, 1922.

ANALYSIS OF FINDINGS OF EIGHT EXAMPLES OF BUNDLE BRANCH LESIONS IN THE HEART.

Case.	Age.	Sex.	Probable duration of disease in years.	Onset.	Pain and dyspnœa.	Œdema.	Rhythm.	Blood pressure.	Murmurs.	Response to digitalis.	Size of heart.	Diagnosis.	Electrocardiogram.
F.H.H.D.	76	M.	10/12	Pain ex.	Pain.	No.	I.	90–180	S.	Good.	M. E.	Arterio-sclerosis.	T.
S.H.B...	48	M.	4	Pain referred to epigastrium.	Vice-like feeling. Dy. Mod. ex.	V.s.	N.	160–200(S.)	S.	Fair.	E.	,,	T.
F.B.B.I.	64	M.	3	Pain and discomfort	Pain. Dy. ex.	No.	I.	110–160	S.	St.	E.	Advanced cardiorenal disease.	T.
F.I.I.P.	58	M.	2	Dyspnœa ex.	,,	Yes.	I.	170–200(S.)	None.	Good.	Large.	Arterio-sclerosis.	T.
F.O.P.S.	61	F.	3/12	Pain ex.	,,	No.	F.	80–190	None.	Good.	Sl. E.	Cardio-sclerosis, hyperthyroidism.	AT.
F.I.O.S.	59	M.	6/12	Pain and discomfort.	,,	No.	R.	100–140	S.	Not given.	Not E.	Arterio-sclerosis.	AT.
F.D.O.O.	81	M.	8 days	Sudden dy. and pain.	,,	Yes.	I.	100–150	S.	Good.	Sl. E	Senile arterio-sclerosis.	AT.
F.S.M.L.	63	M.	1	Palpitation.	Nervous feeling. Dy. ex.	No.	R.	100–150	S.	Not observed.	E.	Arterio-sclerosis.	AT.

Ex. = On exertion. Dy. = Dyspnœa. V.s. = Very slight. I. = Irregular. R. = Regular. S. = Systolic. N. = Normal. F. = Attacks of fibrillation. St. = Using strophanthus habitually. M. = Moderately. Sl. = Slightly. E. = Enlarged. T. = Typical AT. = Atypical.

of the R-waves, so that the lesion must be considered a serious one, if not complete.

The four patients with typical records complained of severe pain over the heart, and also showed greatly increased blood pressure. In the other four there was no increase in blood pressure of any extent, and there was a history of pain in only one person. The orthodiagrams of the hearts of those with typical records all revealed markedly enlarged hearts of the aortic type. Only two of the patients with less typical histories showed this enlargement, the other two having enlarged hearts of the vertical type.

As the table shows, only one patient was under 50 years of age in this series, he being 48. All but one of the eight were males. There was no uniformity in duration of disease, one man having a normal tracing two and a half years prior to the appearance of a typical bundle branch lesion. Dyspnœa and præcordial pain were present in each record, the præcordial pain being most marked in those with definite bundle branch tracings. These attacks, which were intermittent, came on usually by exertion. In one person it was the chief complaint which brought him for examination. Only two of the typical bundle branch cases were bothered with cough—brought on, no doubt, by some congestion in the lungs. The heart valves were not primarily involved in one-half of the patients.

CARDIOSPASM

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IF the process of deglutition is observed radioscopically in the normal individual, delay at the cardiac sphincter is only just sufficient to be perceived. The condition known as cardiospasm implies the overaction or too persistent action of this sphincter, resulting in derangement of the mechanisms of swallowing, and eventually gives rise to various pathological changes in the œsophagus.

Ætiology.

The ætiology of the condition is doubtful. It was at one time regarded as a manifestation of hysteria, but it does not appear to be especially common in the neurotic, and certainly cannot be cured by treatment of purely suggestive value. A history of vague dyspepsia frequently precedes its onset, and in about one-tenth of the cases gross disease of the stomach, such as carcinoma or ulceration, is found to occur coincidently. It is possible to discover an analogy between this chronic spasm of the cardiac sphincter and the acute spasms of other parts of the alimentary canal observed in certain abdominal conditions—in both cases a protective mechanism which retards the progress of food towards the site of a lesion. On the other hand, one might conjecture that an interruption in the wave of contraction of the œsophageal musculature could be caused by quite a small island of sclerosis, as happens in the muscle of the heart in heart-block.

Stages of the Disorder.

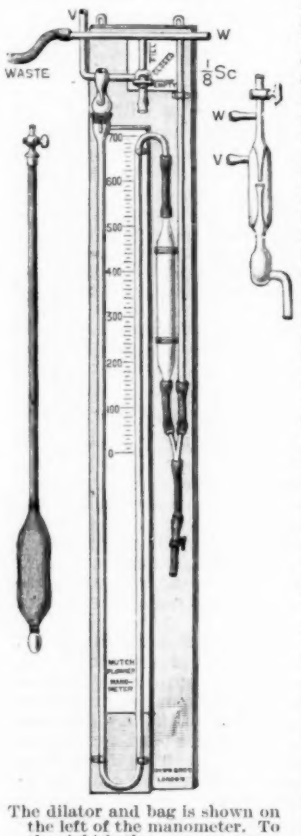
Three stages of this disorder have been described. Discomfort—seldom amounting to actual pain—during a meal is the first symptom. It is referred to the lower part of the sternum, and may occur several times during a single meal and then pass completely away for days, or weeks, or months, tending to recur at shorter and shorter intervals. This phase represents either the painful overaction of the sphincter and muscular coats of the œsophagus or indicates some lesion, possibly quite trifling, of the lower end of the gullet. Characteristic of the second stage is the sudden and explosive vomiting of small quantities of food during meal-times. This also is very variable in its incidence, occurring perhaps two or three times during a single meal and then ceasing for several days or longer. In this stage the gullet, unaccustomed to the retention of food, precipitately returns one or two mouthfuls when difficulty in their transmission arises. In the third stage the œsophagus becomes more tolerant of retaining food which it can no longer successfully propel. Vomiting is less spontaneous and less frequent, but when it occurs a larger amount of non-acid material is brought up. This may be retained for many hours, and examination of the vomit may show the retention of fragments of some particular meal for many days.

At this third stage the peristaltic action of the gullet is ineffective, and the passage of food through the sphincter depends largely on the weight of the column of food collected. When this pressure exceeds the resistance of the sphincter the food tumbles into the stomach and for the moment relief is felt. Radioscopically the altered shape and function of the gullet can be very easily observed. Instead of a tube patent only when food passes down it, the œsophagus has become a bag—an accessory stomach, as it were, never entirely empty, with walls hypertrophied, so far as the muscular element is concerned, and exhibiting peristalsis only in their upper part. The movements communicated from the pulsation of the heart can be observed. In extreme cases the dilatation may rise above the xiphisternum, while in its lower part it

may bulge so widely that a pouch can be detected each side of the shadow of the vertebral column, sagging down so that the sphincter is no longer the lowest part of the passage. With such severe distortion it can be realised that it is often a matter of some difficulty to find the cardiac orifice with a bougie.

Treatment.

Many methods have been devised to remedy the condition. In all but the severest cases it is not difficult to pass a dilating bougie, and when there is considerable pouching a closed rubber tube weighted with mercury will readily sink through the aperture. But when the disorder is of any considerable duration even the frequent passage of large bougies has no real curative effect. Starvation for a period may cause a temporary improvement, but the disorder will soon recur. Nor has any lasting benefit accrued from the use of drugs. Atropine is the drug most frequently employed, but its failure is not surprising in view of the fact that the sphincter is supplied by an inhibitory branch of the vagus, paralysis of which should increase rather than relieve the spasm. In one instance I was called in to see an elderly man who had been taking large doses of atropine without effect on the cardiospasm. I advised its immediate withdrawal, as there were unmistakable signs of atropine poisoning; but it was too late, for vagal control of the heart had been abolished and the patient died a few days later.



The dilator and bag is shown on the left of the manometer. To the right is the vacuum pump. When only one water tap is available water pressure can be secured from a side piece W attached to the pump, while suction is obtained from V. In fitting up the apparatus W is joined to W and V to V.

On theoretical grounds pilocarpine should have a better chance, but experience has shown that a lasting cure can never be effected without forcible dilatation of the sphincter sufficient actually to paralyse it; for this purpose a special hydrostatic dilator is now employed. This instrument, shown on the left of the illustration, consists of a flexible hollow bougie of gum elastic, to the lower end of which is affixed a bag composed of rubber laid upon a tough silk fabric which definitely limits its expansion. Water passing down the tube is forced into the bag, which is so contrived that at low pressures it is thinnest in the middle, but at higher pressures the maximum expansion is at its centre. At the lower end of the bougie a metal olive is fixed, drilled for the passage of a silk guide. The aim of the procedure is to apply a known dilating pressure by means of the bag, the maximum circumference of which engages the centre of the sphincter.

A Convenient Apparatus.

A convenient apparatus for regulating the pressure is that devised by Mutch and myself and shown in the illustration. W is attached to a water tap, and the water runs through the horizontal limb of the T-piece system via the waste pipe back to the sink. When the dilator is attached, any obstruction to the outflow will cause a rise of pressure in the bag, and if the obstruction be complete the pressure in the bag will become that of the water-main. Compression of the water-tube by the finger and the observance of the reading of the attached manometer will secure the pressure required—namely, something between 600 and 700 mm. Hg. The dilator is connected by means of a long soft tube just below the 3-way stopcock. To avoid the water finding its way into the U-tube of the manometer, the wide tube shown on the right of the illustration is brought into the system. The 3-way cock is introduced in such a way that the bag can be rapidly emptied by the suction pump when it is required to be withdrawn.

Method of Dilatation.

Before the dilatation is commenced the apparatus should be carefully tested by raising the pressure to 800 mm. Hg and then emptying a few times, the time required both to fill and to empty being noted with a stop-watch. The bag itself should be smeared with glycerine to secure its easy passage. Only in the severest cases, where difficulty in finding the cardiac opening is anticipated, will it be necessary to use the silk guide. About a yard of this attached to a glass bead should be swallowed overnight; threaded through the metal olive, it will serve as a means for regulating the progress of the tube into the stomach. A general anæsthetic is not required, but the manipulation will be rendered less painful to the patient by the thorough cocainisation of the fauces and pharynx.

The patient now takes his seat in front of an X ray screen and the X ray tube is centred on the diaphragm. The dilator is then passed into the stomach. The usual method is to correct its position in relation to the sphincter by means of the X ray, applying the water-pressure when the olive is 2 inches below the diaphragm. However, it is by no means easy to be sure of an accurate engagement of bag and sphincter in this way. Working with Mutch, I have found that the most satisfactory plan is to pass the whole bag well into the stomach, using the X ray merely to make sure of its arrival. The bag is then inflated in the stomach and pulled back firmly as far as it will come through the cardiac orifice; this in itself exerts considerable traction on the sphincter. The water in the bag is then extracted by turning the stopcock to "empty," and then the dilator is withdrawn 2½ inches, after which the bag is again filled. In this manner it can be made certain that the pressure has been exerted at the required point. As the bag expands the patient will feel a sharp substernal pain which disappears when the pressure again falls to zero.

The advantage of this technique, we claim, lies in the accuracy with which the sphincter is found with the dilator. It is never easy to estimate the position of the olive with exactitude under the X ray. The patient tends to slip forward in the chair and his heavy breathing makes the diaphragm an untrustworthy landmark. It is very desirable not to miss the sphincter at the first attempt, as the patient's distress is increased by prolonging the manipulation.

Immediately after a successful dilatation the patient can swallow food quite normally, and bismuth can be seen to fall straight into the stomach without even the momentary hesitation at the sphincter seen in the normal person. For some days a trifling substernal soreness may be complained of, but this soon passes away. The dilatation must be repeated after a few days and possibly a third, or even a fourth time. No definite rule as to the number of dilatations can be laid down, but a permanent cure cannot be expected until the œsophagus has remained empty of any food residue for several weeks. The return of a severely pouched œsophagus to normal is a matter of many months, but so long as it functions satisfactorily this will eventually take place, or at any rate the dilatation will become less and less.

Prospect of Cure.

The prospect of a permanent cure offered by forcible dilatation is extremely good. Plummer, at the Mayo

Clinic, followed up the histories of some 100 cases of cardiospasm of the third stage, and found after intervals varying from one to seven years a percentage of 82 per cent. cured and 12 substantially benefited. Had a diagnosis been made in the earlier stages no doubt the prognosis would be even better. It is possible that an extension of this method might be very useful in certain cases of gastric flatulence where relief cannot readily be obtained by eructation. Such cases are fairly common and are often particularly difficult to deal with. They fall readily into two classes —those with lax abdomens and low abdominal tension, and those in whom tension is high. In the former class relaxation of the cardiac sphincter would be harmful and might be expected to lead to aerophagy; indeed, it seems probable that the sphincter is always relaxed in aerophagists. But where the abdominal pressure is normal or high and eructation difficult it must surely indicate that some degree of overaction of the sphincter is present, even though actual cardiospasm cannot be said to exist. Such a state of affairs can be very readily diagnosed by noting obesity with firm abdominal walls, or the "tight" abdomen of a thin subject coupled with a high or normal position of the stomach as seen radioscopically.

A METHOD OF TREATING ABSCESSES.[1]

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FOR the purposes of this paper, may I ask you to imagine the interior of a room to be that of an unopened acute abscess, full of pus at considerable tension. The pus contains multitudes of the organisms that have been instrumental in causing the abscess —it is full, every part being continually in close contact with the pus. The walls, floor, and ceiling are covered with recent granulation tissue, swarming with organisms advancing not only into the walls but also into the tissues around. Somewhere in the room, possibly partially embedded in floor, walls, or ceiling, is the cause of the abscess—a piece of dead bone or a foreign body; or there may be no such definite cause if the abscess had an embolic origin—as in pyæmia—or if it was caused by the penetration of a septic instrument whose path of entry closed over immediately after the infliction of the wound. Outside the walls are the normal tissues of the body where a perpetual battle is going on between organisms which have found their way through the barrier of granulation tissue and a host of leucocytes which Nature has hurried to the spot to combat the invaders.

It is important to bear in mind that in such a case the pus is not the disease, but only the result of the disease which is in active progress in the substance of the walls and in the surrounding tissues.

Low Drainage.

How ought we to deal with an abscess of this kind? It is, I suppose, generally accepted that it should be opened in the most dependent part in order to secure free and efficient drainage. An opening would be made in the floor, or possibly two lateral openings through the walls close to the floor; drainage-tubes would be inserted into these openings and the pus allowed to escape. The walls and the whole interior may be scraped in order to remove the infected granulation tissue, but this practice has been to a great extent given up, for it has been recognised that in the doing of it fresh channels of absorption are opened up and a risk run of extending the infected area. The cavity may be irrigated with an antiseptic solution, but this escapes quite easily through the drainage-tubes.

The result of this drainage is that tension is relieved and the walls of the cavity fall into folds holding in their interstices multitudes of organisms; nothing is done at the time to prevent the spread of organisms from the infected walls into the surrounding tissues. Now and again, it may be once or twice in the 24 hours, a stream of some antiseptic fluid is irrigated into what is left of the cavity, but its exit is rendered easy and immediate by the free drainage that has been provided, and it cannot enter into the remote recesses in the walls, which contain soft granulation tissue and pus. Under these circumstances, the patient's temperature falls as the result of the relief of tension, but beyond that the actual cure is left to Nature, aided, it may be, by general constitutional measures directed to increase resistance and strengthen the defending leucocytes against the advancing organisms. In the majority of cases these measures are successful; in the minority they fail, and septicæmia is the result. A foreign body which cannot be removed at the time of the operation remains septic and irritating, causing a persistent sinus which will only close after further measures are taken for its removal.

Opening through the Roof.

Imagine now what happens if, instead of making an opening in the floor or close to the floor, it be made in the ceiling, relief of tension will cause some of the purulent contents of the room to find an exit through this, and the greater part can be evacuated by slight pressure. If through this opening a tube be passed which reaches to the floor, and through this tube antiseptic fluid is poured, the latter will gradually fill the room from floor to ceiling until it emerges by the side of the tube at the wound, mixed at first with what remains of the pus, but after a very brief irrigation what emerges from the wound will be antiseptic only and the cavity will remain full. If left thus the fluid will be continually soaking into the walls, filling up recesses, surrounding a foreign body if present, and subjecting all the interior surfaces to the action of the antiseptic; if undisturbed the process will go on until the virtue of the antiseptic fluid is exhausted, whilst the number of organisms available to permeate the walls will be enormously reduced and the battle of the defending leucocytes rendered much easier.

Artificial Distension to Clean the Abscess Walls.

If the tube which is passed through the ceiling be closed at the end which rests on the floor and has a valve close to the closed end[2] so arranged that nothing can pass into that end of the tube, and the opening in the ceiling be almost completely closed round the tube, it is possible with the aid of a syringe to distend the cavity almost to the capacity it had when full of pus, thus opening out and exposing to the influence of the antiseptic fluid every nook and cranny in its walls.

The practical application of this method is simple. Take, for example, a case of acute necrosis of bone, almost always due to infection by *Staphylococcus aureus*. Part of a bone is probably bared of periosteum and bathed in pus. If a small opening be made in the highest possible position and through a tube arranged as described above small quantities of the most efficient antiseptic (flavine in this particular instance) are injected with a syringe once or twice a day, the quantity used being sufficient to gently distend the cavity, the result is often very extraordinary. The end of the tube may be left protruding through the dressings, for the valve prevents anything escaping through it, and the tube itself will remain full of the antiseptic fluid. It may be that the grip of the small incision will suffice to keep the tube from coming out, but if necessary a lateral stitch through it and one edge of the wound will ensure the lower end of the tube remaining at the deepest part of the cavity. The dressings require very little changing; the original one may be left on several days, and will be continually moistened by the small quantities of antiseptic that comes from the wound by the side of the tube. The patient's temperature will fall gradually rather than

[1] A paper read at a meeting of the Medical Society of London.

[2] Vide THE LANCET, 1917, ii., 341.

suddenly, for to a certain extent the tension in the original cavity has been maintained by the injected fluid. If flavine be used, and the dressings changed after three or four days, it often happens that surprisingly little is found on them except antiseptic, the quantity of pus being remarkably small. On withdrawal of the drainage-tube after about five days it will generally be found to bring away with it thick ropy discharge; this is an indication that the antiseptic has done its work and that the cavity is clinically, if not bacteriologically, aseptic.

What has happened to the piece of bare bone under these circumstances? For four or five days it has been continuously soaking in a mixture of flavine, pus, and serum; if the treatment has been successful it, too, has been rendered sterile and harmless, for it is erroneous to suppose a sequestrum or piece of bone that has been denuded of its periosteum must necessarily cause a permanent sinus. Outside the body a piece of bone, like anything else, can be rendered sterile by soaking in an efficient antiseptic, and it is possible to do this whilst it is still in the body where it can be rendered as harmless and unirritating as a piece of wire or a metal bone-plate.

The principle of this method, then, is this: The abscess is opened at its highest point, the cavity is at intervals filled to its utmost capacity from the bottom upwards with an antiseptic fluid, which remains partially distending it and continually soaking the walls until they are rendered sterile. In all cases where the organism is found to be either streptococcus or staphylococcus, flavine of the strength 1 in 1000 is by far the best antiseptic, for it has the great advantage that when mixed with pus or serum it still retains powerful germicidal properties. It is of little or no use in cases of *Bacillus coli* infection or against the tubercle bacillus; for these some other agent is required. The use of flavine should also be limited in time; it will be found to delay healing if kept in contact with normal tissues more than six or seven days. When the interior of the cavity has been rendered comparatively sterile, and the injection of flavine been discontinued, it may be advisable then to make a puncture in the most dependent position, and put in a small drainage-tube in order that the closing up of the cavity may be as rapid as possible.

Comparative Methods.

It will be noticed that there are several very marked differences between this method and that known as the Carrel-Dakin method; in the latter the irrigation is continuous, but the fluid is allowed to flow away as soon as it has been brought into contact with the tissues instead of being kept soaking them under pressure. The openings in the Carrel-Dakin tubes are numerous and extend some distance along the tube; the irrigated fluid will therefore come out of those openings where the resistance is least, and thus the deeper parts of the wound may get no treatment at all. The Carrel-Dakin tubes are apt to be pushed out of the wound, any movement on the part of the patient or any disturbance of the apparatus frequently brings it about that they merely lie flat on the surface of the wound, and if this is to be prevented the patient must be kept in bed and the affected part immobilised, whereas in the method I have described these are not necessary, for the whole of the simple apparatus is moved with the affected part.

That part of this method which aims at keeping the abscess cavity more or less distended with antiseptic fluid in order that this may act upon every part of the wall serves a very useful purpose in the case of tuberculous abscesses.

Treatment of an Ilio-Psoas Abscess.

Take, for instance, the case of an ilio-psoas abscess which has its origin in disease of a dorsal vertebra. Here, I suppose, the usual course is to treat the spinal disease by rest and immobilisation and as far as the abscess is concerned to rely on repeated aspirations, each aspiration followed by the injection of small quantities of fluid or semi-solid germicide such as bismuth paste or iodoform emulsion, or an open operation, clearing away all the contents and lining of the abscess cavity with immediate closure. In all these nothing very efficient is done to deal locally with the disease in the vertebra, which after all, is the most important part, for if the injected material be semi-solid, none of it will reach the affected bone; if it be fluid, the small quantities generally used may also remain in the abscess cavity and never reach the diseased bone.

If now after such an abscess has been cleared of its liquid contents by aspiration an equal or almost equal quantity of germicidal fluid (made as near in specific gravity as possible to the contents of the abscess) be injected into the cavity, and the patient's position be so arranged that the diseased bone be at the lowest level, the injected fluid will, partly aided by gravity, find its way into every recess that previously held fluid, including the diseased bone, which will thus be kept soaking in the injected fluid.

Iodine in some form is well known to be the most efficient agent in the local treatment of tuberculosis. I have generally used Morton's fluid diluted either once or twice with water or saline solution, according to the size of the cavity, and consequently to the quantity of fluid injected. The appearance of iodine in the urine is a good indication that it does soak into the walls of the cavity; in so doing it must have a very powerful action on bacilli that are present in them. The injection may have to be repeated twice or three times, and eventually what is left of the injected fluid may have to be withdrawn, but it is generally absorbed, and is, I am convinced, frequently instrumental in arresting disease in the bone.

Treatment of Cysts.

I would like to mention yet another application of this method—the treatment of cysts; the practice of treating these by tapping and injecting has been greatly replaced by that of open operation—presumably because of the percentage of failures, or only partial successes, obtained by the older method. The reason for these failures is not difficult to see, for when cysts were evacuated of their contents by trocar and cannula the quantity of fluid that was subsequently injected was so small in comparison with what had been removed that it was insufficient to distend the collapsed walls, and so many parts of the latter got little or no treatment; if by manipulation the fluid passed over the whole of the surface its application to each part was so brief that it did not kill the epithelium in every part and recurrences took place at partially treated spots.

Here, again, if after the fluid has been withdrawn an almost equal quantity of irritating fluid be injected, every part of the cavity previously in contact with fluid will have its dose of the remedial agent.

Conclusion.

In the case of cysts, such as hydroceles which are lined by a single layer of endothelium, a very brief application of an irritating fluid is sufficient; if a sufficient quantity of iodine solution or carbolic acid be introduced and withdrawn again in ten minutes it will generally be found to have accomplished its object; the treatment, however, is very painful and a general anæsthetic will be necessary. A previous injection of a local anæsthetic, such as novocaine, I have not found sufficient.

SECOND INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY AT ROME.—The second international Congress on Comparative Pathology will be inaugurated at Rome on Sept. 20th. Prof. E. Perroncito, Institute of Parasitology, University of Turin, is the secretary. Amongst subjects suggested for discussion are: Regeneration of nerves in disease and after lesions; actual state of our knowledge regarding cancer; vitamins; diseases due to filtrable viruses; diseases of ruminants, fowls, and bees; bacteriophages, bacterial tumours in plants, symbiosis and parasitism in plants, cyclical evolution of bothriocephalus, ascarides, ankylostoma, and aphthous fever.

A CASE OF LATENT INTRACRANIAL ABSCESS

ASSOCIATED WITH DOUBLE ACUTE MASTOIDITIS

By MICHAEL VLASTO, M.B. LOND., F.R.C.S.ENG.,
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AND
SYDNEY A. OWEN, M.D. CAMB.,
PHYSICIAN TO THE ABOVE HOSPITAL.

THE following case presents, both from the surgical and neurological aspects, several features of considerable interest.

A. *From the Surgical Standpoint* (M. V.).

Period I.—The boy, aged 8 years, was first seen by me on August 29th, 1921. He had been "ailing" for six days "with pains in the head," and "vomiting" for three days, and had bilateral otorrhœa one day. He looked extremely ill. He was delirious, with dry skin and dirty tongue; temperature 102·4° F., pulse 140. The pupils were equal, but the response to light was sluggish. Rigidity of the neck, head retraction, and Kernig's sign were present. Otherwise the examination of the central nervous system was negative. Both ears were discharging profusely, and behind the left ear there was a distinct swelling. There was marked tenderness behind both ears. A diagnosis of double mastoiditis and early meningitis was made.

Operation on the 29th. Prior to operation a lumbar puncture was made and yielded a slightly turbid fluid under pressure. Subsequent culture of this fluid was sterile. A double Schwartze operation was performed. Pus was found on both sides and drainage-tubes inserted.

For the next nine or ten days the boy's general condition remained much the same as on admission, and little hope was entertained of his recovery. The temperature was of an irregular remittent type, varying between 101° in the morning and 105° at night; the average pulse-rate was 130 and the respirations 30. On Sept. 3rd he developed a very definite erysipelas which spread from the left mastoid wound over the left side of the face. Both mastoid wounds were suppurating freely, and the wounds looked dirty and unhealthy. Kernig's sign and rigidity of the neck persisted. There was incontinence of urine and fæces. The boy was semi-comatose. The condition was still regarded as one of diffuse meningitis. Lumbar puncture therefore was carried out on several occasions, but the fluid withdrawn was now clear and cultures from it continued to be sterile. On the 6th 10 c.cm. of antistreptococcic serum were given subcutaneously, six doses in all. On the 10th an abscess was opened on the dorsum of the right hand. The pus on culture showed staphylococci and Gram + diplococci. On the 14th a definite change came over the patient. He appeared very much better. His tongue was cleaner and the rigidity of the neck, which had been getting less, disappeared. On the 16th an abscess in the fat of the buttock was opened and drained. On the 22nd a superficial inflammatory area which had been forming on the right arm began to subside spontaneously, this being interpreted as a sign of increased resistance. The boy, who was now eating and sleeping well, was placed for the first time on a balcony. By the 23rd the temperature and respiration-rate reached normal, although the pulse-rate was a little rapid (100–112). On the 26th both ears were dry, but a little discharge was subsequently seen on one or two occasions from the left ear. So well did the child appear on the 29th that arrangements were made to send him to a convalescent home.

Period II.—On Sept. 30th the child complained of headache and the temperature dropped to subnormal. Both pulse- and respiration-rate were much lower. He began to vomit two or three times daily. The headache was diffuse in character and located over the frontal regions, but the vomiting was not cerebral in type. By Oct. 6th he again looked very ill. He was lethargic. The tongue was furred. Temperature 97°, pulse 60, wasting very marked.

Operation on the 8th. Both middle fossæ were explored through the roof of the mastoid wounds, which were reopened for the purpose. No extra- or sub-dural abscess being found, systematic exploration was made into the brain substance of both temporo-sphenoidal lobes with negative result. The sub-arachnoid fluid withdrawn at this operation yielded, on culture, Gram + diplococci. The patient recovered rapidly from the operation and the improvement which followed was dramatic. He was apparently restored to health. It was noted, however, that the temperature continued subnormal, although the pulse-rate had increased in frequency. Vomiting occurred once every second or third day. The only complaint made by the child was that of occasional headaches.

By the end of the month the child was so far recovered that arrangements were again made to send him away.

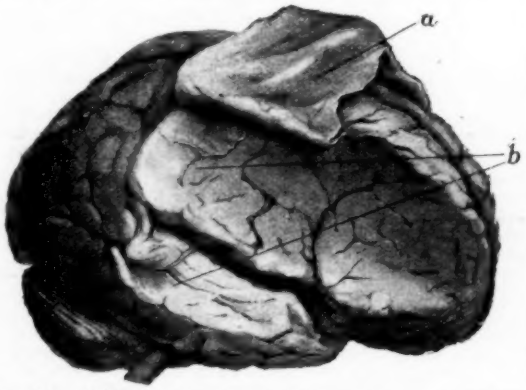
Period III.—On Nov. 12th, however, the patient again appeared ill. He vomited four times and complained of fairly severe frontal headache. From then onwards he again presented the picture of increasing intracranial pressure. On the 18th he was very drowsy, but could just be roused to carry out simple commands. The pulse-rate was slow with subnormal temperature and he vomited frequently. He complained of headache, now located definitely to the right frontal region. After a very careful consideration of all the facts we came to the conclusion that the cause of the increased intracranial pressure was probably seated below the tentorium, on the left side; but it should be noted that immediately prior to the operation about to be described the patient's left upper limb exhibited clonic movements.

Operation on the 18th. Dr. Langdon Hewer administered ethanesal. Time 32 minutes. Seeing that there was considerable doubt as to which side the abscess might be found and that a rapid operation was imperative, it was decided to expose both cerebellar fossæ through a single incision. An inverted U-shaped incision (Cushing) was made through the scalp down to the bone along the superior curved line and the soft tissues dissected down to the anterior border of the foramen magnum. With Doyen's perforator an opening was made into the left posterior fossa and this was extended with nibbling forceps. The dura appeared healthy. This was incised and the cerebellum explored in various directions with the scalpel. The right posterior fossa was opened and treated in a similar manner. No abscess was found. The patient appeared to recover from the operation, but died suddenly on the 20th.

B. *From the Neurological Standpoint* (S. A. O.).

On Sept. 2nd, when I first examined this boy, I came to the conclusion that he was suffering from purulent meningitis and not from cerebral abscess. Great mental irritability, high temperature, rapid pulse, head retraction, generalised rigidity, and turbid cerebro-spinal fluid appeared to justify the diagnosis. On Oct. 7th the child's condition presented a very different clinical picture. He was drowsy but still very irritable when examined. A low temperature, slow pulse, recurrent vomiting with periodic headache, of indefinite localisation, pointed to increase of intracranial pressure. He was very wasted—a point strongly in favour of intracranial suppuration. There was generalised hypotonicity of all limbs, symmetrically disposed and of considerable degree. Ophthalmoscopic examination revealed at this stage well-marked choked disk, previously non-existent (right > left). Beyond a very slight (early) left facial weakness there were no localising signs pointing to a focal lesion above or below the tentorium. A middle fossa exploration, right and left, as a tentative measure, was carried out. The improvement following this procedure was dramatic in the extreme. He was restored, apparently to health, and was on the point of being discharged to a convalescent home. The papillo-œdema was subsiding and several detailed examinations, now easy to carry out, failed to reveal any clinical abnormality in the nervous system.

On Nov. 18th I was again asked to see the boy. The symptoms of intracranial pressure had recurred. He was profoundly drowsy, but could just be roused to carry out simple commands. The pulse was slow, and the temperature subnormal. He vomited repeatedly and complained of headache, now located definitely to the right frontal region. Detailed examination revealed only two positive signs: (*a*) an increase in the papillo-œdema (left > right), and (*b*) a relatively greater hypotonicity of the left upper limb. This arm placed in an unwonted posture would be retained there: he seemed disinclined to use it voluntarily and refused to perform simple movements of flexion, extension, or grasping. There was certainly no paralysis as the arm was jerked away briskly when pricked. The deep and superficial reflexes were normal and symmetrical on both sides. Hypotonicity was a feature throughout. The cranial nerves, second excepted, appeared normal. After a very careful consideration of all the facts, I asked Mr. Vlasto to explore below the tentorium.



Drawing of brain showing condition found post mortem: *a*, Meningeal covering of abscess thrown back; *b*, Depressed area of brain.

Post Mortem.—The coverings of the brain were adherent to both middle fossæ decompression wounds. Anterior to the right decompression wound the meninges were fused together to form part of the wall of a very large collection of pus. The abscess cavity was situated in the right middle and anterior fossæ. It extended over the lateral aspect of the brain to within an inch of the superior longitudinal sinus. The pus was enclosed in a cavity between the dura and the pia arachnoid. The meninges over the right superior temporal gyrus, the lower two-thirds of the precentral and postcentral gyri were tacked down and separated with difficulty. The underlying convolutions in places retained their outline, but in others they were so flattened as to be unrecognisable, the appearance in general being that a large portion of brain substance had been removed. The meninges forming the wall of this cavity, which contained over half a pint of pus, were thickened and villous. Culture from this pus showed Gram + diplococci and staphylococci.

We are indebted to Dr. Elizabeth O'Flynn for her post-mortem notes of the case.

UNIVERSITY OF MANCHESTER. — Mr. Robert Robinson, D.Sc., F.R.S., professor of chemistry in the University of St. Andrews, has been appointed to the chair of organic chemistry in the University of Manchester. Prof. Robinson graduated at the University of Manchester with first-class honours in 1905, and since then he has had wide and varied experience as a lecturer in his own university, as professor of organic chemistry at Sydney University and at the University of Liverpool, and since 1921 at St. Andrews. He was director of industrial research for a short time in the British Dyestuffs Corporation, and his original investigations on natural plant products and his researches on structure in organic chemistry have opened up new lines and methods of inquiry in biochemistry.

NEURITIS PRODUCED BY A WRISTLET WATCH.

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THE manifestations of pressure upon the lower trunk of the brachial plexus by a supernumerary, or even a first dorsal rib, are so well known that the occurrence of sensory disturbances along the inner border of the forearm or hand is apt to lead to the patient being referred for an X ray examination of the neck before an adequate investigation has been made. The frequent presence of small cervical ribs, which are not giving rise to compression of the nerve trunk, only adds to the confusion, and, as Buzzard[1] has so recently pointed out, emphasises the necessity for a most careful examination of all patients exhibiting motor or sensory disturbances in the distribution of the ulnar nerve.

Two Examples.

During the last 12 months I have had an opportunity of observing two patients suffering from subjective and objective sensory manifestations in the ulnar part of the hand, and the unusual cause of the symptoms seems of sufficient importance to merit a brief description.

The first was a student who asked me to examine his hand on account of a tingling pain experienced along the inner border of the hand and in the little finger. The pain was only moderately severe, but had persisted more or less constantly for some weeks and was beginning to cause considerable discomfort and anxiety. On examination a tender point was discovered on the dorsal surface of the styloid process of the ulna, and pressure in this situation caused pain to radiate from this point into the dorsal cutaneous branch of the ulnar nerve. No tenderness of this branch was found above or below the well-localised point referred to. The only other manifestation was the presence of a small badly-defined area of hypoæsthesia, to the lightest tactile stimulus, over the middle of the dorsal surface of the fifth metacarpal bone. There was no sign of paresis or atrophy of any of the intrinsic muscles of the hand, nor were any trophic changes found. On investigating a cause for this localised neuritis the only possibility appeared to be the wearing of a tight wristlet watch, which clearly could produce compression of the dorsal cutaneous branch of the ulnar nerve as it curved round the lower extremity of the ulna. On discarding the wristlet the discomfort gradually disappeared.

The second patient was thought to be suffering from compression of the lower trunk of the brachial plexus by a cervical rib, and was referred to me for examination owing to my interest in that condition. She complained of a tingling pain in the ulnar part of the hand and fingers. The pain was induced by movement of the limb, but investigation showed that wrist movements were the actual cause and the pain was not affected by depression of the shoulder girdle. A similar well-localised point of tenderness was present as in the previous patient, but the objective sensory disturbance was well defined (Fig. 1) and corresponded closely to the cutaneous distribution of the dorsal cutaneous branch of the ulnar nerve. No motor or trophic disturbances were present. On inquiry it was found that a tight wristlet watch had been worn for some time, and fixing this in position it was seen to be undoubtedly compressing the branch of the ulnar nerve against the bone. As in the former patient, the pain gradually subsided when the wristlet was discarded, and the objective sensory disturbance began to disappear.

Remarks.

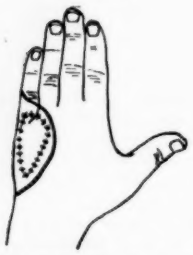
The manifestations were so slight in the first patient that I was a little doubtful at first as to whether the suggested ætiology was correct, but the appearance of a second patient exhibiting such well-defined objective sensory symptoms and the recovery in both, after ceasing to wear the wristlet, seem to establish the accuracy of the diagnosis. The dorsal cutaneous branch arises from the ulnar nerve two or more inches above the level of the wrist-joint, and after passing downwards and backwards under the flexor carpi ulnaris usually curves round the inner border of the lower extremity of the ulna before dividing on the

[1] THE LANCET, Feb. 18th, 1922.

dorsum. The tracing (Fig. 2), made from a radiogram of a dissection, in which the dorsal cutaneous branch has been isolated in the neighbourhood of the wrist and painted with a material which will give a shadow, shows the normal intimate relation of the nerve to the bone. From a number of dissections it appears that the branch occasionally may curve on to the dorsum distal to the lower end of the ulna, in which position ligaments intervene between the nerve and bone and consequently the former is less exposed to compression by any constriction at the wrist.

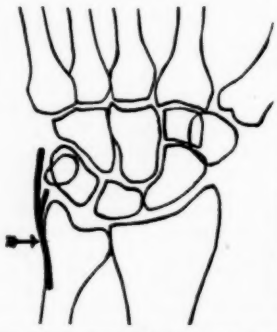
Dangers of Constriction.—These cases emphasise the clinical significance of neuro-osseous relations, and the necessity to avoid any form of constriction or pressure at points where nerves lie upon bone. Several times I have seen, in the distribution of the musculo-cutaneous nerve of the leg, clinical evidence of changes in the nerve, apparently due to compression by a tight sock-suspender or other form of constriction below the knee. In every case the manifestations of neuritis have been discovered more or less accidentally in the course of a general examination of the nervous system, and none complained of subjective symptoms in this region; on inquiry a small proportion stated that they had occasionally suffered from tingling or a similar sensation in the outer part of the leg and on the dorsum of the foot, but it was obvious that none had experienced very much pain. The objective manifestations were both sensory and trophic. The former ranged from small patches of hypoæsthesia to areas of anæsthesia and analgesia corresponding almost to the full cutaneous distribution of the musculo-cutaneous nerve.

FIG. 1.



To show the loss of sensation in the second patient. Continuous line = anæsthesia to lightest touch. Crosses = analgesia to pin prick.

FIG. 2.



To demonstrate relation of dorsal cutaneous branch to bone. The arrow indicates point of compression.

Trophic Changes.—Trophic changes were more contantly discovered and consisted of loss of hair, loss of cutaneous elasticity, and greater smoothness of the skin in the distribution of the affected nerve. In a few the absence of hair accurately marked out the cutaneous distribution of the musculo-cutaneous, and the difficulty of raising the skin from the deeper tissues of this region, compared to the ease with which it was elevated on the inner aspect of the leg, was very striking. No patient exhibited any demonstrable paresis in any of the anterior tibial or peroneal groups of muscles. Invariably the objective sensory and trophic manifestations were confined to the distribution of the musculo-cutaneous, and did not extend to the regions supplied by the sural branch of the external popliteal or the external saphenous, which is a point of diagnostic value in localising the anatomical level of the cause of the symptoms. In every patient signs were discovered in both legs, but commonly they were more pronounced on one side.

Although the symptoms were always confined to the distribution of the musculo-cutaneous, there seems little doubt that the compression must be exerted upon the external popliteal, where it curves round the outer side of the neck of the fibula. At this point the external popliteal is very exposed, being in contact with bone and covered only by skin and aponeurosis, whereas the musculo-cutaneous is much more protected since it lies in the peroneus longus.

In spite of the fact that no very serious disturbances have been seen as a result of the compression, it seems possible that trophic ulcers might easily develop and lead to serious consequences, and for this reason it is necessary to realise that compression of the external popliteal by a constriction below the knee may be a predisposing cause of ulceration in the outer part of the leg or on the dorsum of the foot.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF GIANT URTICARIA TREATED BY AN AUTOGENOUS STREPTOCOCCUS VACCINE.

BY W. E. M. ARMSTRONG, M.A., M.D.,
BACTERIOLOGIST, CENTRAL LONDON OPHTHALMIC HOSPITAL.

THIS case appeared to be genuine giant urticaria, and occurred in a female patient aged 31. She said the disease began ten years before after having eaten a dish of mushrooms.

Signs and Symptoms.—Every four or five days a red rash appeared, rapidly reached a maximum degree of intensity and extent, and usually subsided almost completely within 48 hours of the first onset. The rash was accompanied by a temperature which often rose as high as 102·5° F., and by a considerable amount of headache and general malaise. The eruption presented several different characters, which were apparently only different degrees of one and the same pathological process. It followed no definite plan of distribution, but developed on any part of the face, body, or limbs, showing no predilection for any particular anatomical locality. The different features shown graded gradually into one another, suggesting that the differences were of degree and not of kind.

First small patches of erythema appeared; these were usually multiple, varying in size from spots like erythema nodosum to large, flat, map-like areas with irregular moth-eaten edges not well differentiated from the surrounding skin. These patches sometimes subsided, but more often became larger and more boldly outlined, at the same time taking on an urticarial character. This urticaria frequently reached a very extreme degree and caused large increases in the size of the affected parts, which had the appearance of a cellulitis, though the skin remained soft to the touch and showed little or no signs of the brawniness incidental to an erysipelatous condition. When the rash faded it left behind a scaly peeling surface. These phenomena could be partially induced by artificial means. A light blow or the exertion of pressure on any part of the patient's body produced an urticarial swelling of greater or less degree according to the amount of violence exerted.

History.—The patient's history, and that of her family, did not afford much clue to the nature of the disorder, but there was a definite history of rheumatism in the family, and she herself suffered from this complaint and from sore-throats.

As the patient had had all the ordinary treatments with no benefit, it only remained to see if some method of immunisation could be devised. The selection of a likely antigen was accordingly the first practical consideration. The recurrent temperature pointed to a bacterial origin. The combination of sore-throats with rheumatism, the likeness of the patches to erysipelas, and the peeling of the epidermis which nearly always followed the eruption, suggested that an organism of streptococcal type might be the cause of the trouble.

Clinical Examination.—No obvious source of infection could be discovered. The Wassermann reaction was negative and in other respects the blood appeared normal. A blood culture was not undertaken because it was improbable, from the low range of temperature and the comparatively slight constitutional disturbances, that the bacterial invasion of the blood stream attained a sufficiently high concentration to render positive findings likely by this method of search. A catheter specimen of urine was obtained when the patient was in the middle of an attack. From this a small badly-staining short streptococcus was isolated. This was grown with some difficulty aerobically on trypsin-agar and a vaccine prepared.

Treatment.—This was begun by the inoculation of a pilot dose of 1,000,000 dead streptococci. This measure was promptly followed by an attack of rheumatism which lasted for six days. There was no exacerbation of the rash; on the contrary, the latter was very much improved, and continued so for seven days after the inoculation. A similar dose was then given, which did not produce rheumatism, but did produce an immediate and very violent outbreak of the skin condition which lasted for 13 days. This negative phase was followed by a positive phase lasting 26 days, during which the skin remained almost well. The doses were then reduced to 100,000 streptococci. Only two of these were required, the second being administered in December, 1920. Since then there has been no recurrence of either the rheumatism or the skin trouble, and the cure appears to be an absolute one.

The case is worthy of note because of the uncommon symptoms, and also because it demonstrates how a disease which had resisted treatment by various methods for a period of ten years yielded almost at once to immunisation methods appropriately employed. It is also interesting to see that the same bacterium could apparently produce, in the same patient, such clinically dissimilar conditions as rheumatism and urticaria.

COLLOIDAL ANTIMONY IN LEISHMANIA INFANTUM.

BY ROBERT SAMUT, M.B., C.M. EDIN.,
PROFESSOR OF PATHOLOGY, UNIVERSITY OF MALTA.

ENCOURAGED by the successful results obtained in Hodgkin's disease by the use of colloidal manganese, I employed colloidal antimony in a case of leishmania infantum; although the patient's death from purely accidental circumstances prevented me from observing the ultimate result of the treatment, I am convinced that the intramuscular injection of colloidal antimony is of such great advantage over the intravenous introduction of the ordinary solution of tartar emetic that I would recommend its further use in all cases of this disease.

C. B. was first brought to me suffering from profound anæmia. I diagnosed the case as one of leukæmia, since the spleen was enlarged, but omitted the microscopical examination of the blood. I treated the patient with liq. arsenicalis, syr. ferri phosph. co., and glycer. medullæ ossis. The child improved and I then lost sight of her until the beginning of 1921. She was now 4 years of age; a pale, puny, emaciated child with a huge abdomen, an enormously enlarged spleen, a slightly enlarged liver, and petechiæ all over her body. The extreme dark-lemon colour of the skin stood out as a well-pronounced feature in the case. The temperature often ran up to 105° F. and dropped again to normal in a few hours, while the child was seemingly unaffected by the high temperature. The feet swelled sometimes, but not to any marked degree. Leishman-Donovan bodies were present in the blood obtained by puncture from the liver, but were absent from the lymph of a small blister raised for the purpose. The majority of these bodies were enclosed in polymorphonuclear leucocytes; some were free in the plasma. The mononuclear leucocytes (lymphocytes) were increased in number, the following being the blood picture:—

Hb	30%	Large lymphocytes	25%
Erythrocytes	2,850,000 per c.mm.	Eosinophiles	1%
Leucocytes	12,000 ,,	Basophiles	Nil.
Colour index	0·54	Transitional leucocytes	2%
Polymorphonuclears	60%	Mast cells	Nil.
Small lymphocytes	12%	Myelocytes	Nil.

This was the patient's condition when I started intravenous injections of 1 c.cm. of a 1 per cent. solution of tartar emetic. I chose the occipito-temporal veins as the seat for injection, but was obliged to give up the attempt at once as the patient refused to submit to the treatment. I then determined to use the colloidal form of antimony and began treatment, using phials prepared by Messrs. Chatelain, of the Laboratoire des Colloïdes, 2, Rue de Valenciennes, Paris. The solution prepared by Chatelain was 0·001 g. of the sulphide of antimony in 1 c.cm. of distilled water, each phial containing 3 c.cm. of the solution. I injected the contents of one phial deeply into the muscles of the buttock, using one phial daily on alternate weeks.

In a fortnight the spleen had decreased in size, and in about four weeks it had retreated to the left of the mesial plane of the body; prior to the treatment it was fully 2 inches to the right of this plane. Further injections produced further improvement. But one night the patient had a terrible attack of epistaxis; surgical help could not be obtained for several hours, and the child lost enormous quantities of blood. When I saw her she was almost bloodless and suffering from dyspnœa and slight delirium. She sank gradually and died about five days after the hæmorrhage.

Her general health had greatly improved. The size of the abdomen had decreased visibly with the fall in size of the spleen; her colour had also improved. She relished her food, was fond of play, and was able to endure the fatigue of "a walk," while prior to the treatment she was practically unable to get about. It will thus be seen that the improvement in the child's condition could be due to no other factor except the treatment employed.

A CASE OF ACUTE ASCARIASIS ASSOCIATED WITH *TRICHURIS TRICHIURA* COMPLICATING PREGNANCY.

BY C. RUSSELL CORFIELD, M.D. BRUX., L.M.S.S.A. LOND., D.T.M. LIVERP.,
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AND
BERNARD HIRSON, L.R.C.S. & P. IREL., L.M.

ALTHOUGH *Ascaris lumbricoides* is a common parasite of man, and found in most parts of the world, the following case is interesting owing to the severity of the symptoms and the patient's rapid recovery after removal of the cause:—

Mrs. M., a Turkish woman, aged 25, a native of Aleppo, only three months resident in England, and three months pregnant (primipara), was seen by us complaining of constant nausea, cough, loss of flesh, and weakness. As nothing definite was found, with the exception of a few moist râles in both lungs, accounted for by a recent bad cold, her condition was put down to her being enceinte.

A few days afterwards we again saw her, in answer to an urgent call. She had been coughing and vomiting constantly for about 24 hours, and was so weak that she was unable to leave her bed.

Examination.—Patient was very pale, face drawn and anxious, supra- and infra-clavicular regions and intercostal spaces were hollow, pelvic bones prominent. Abdomen flat, limbs correspondingly thin—in fact, patient presented a typical picture of starvation. She hiccoughed, coughed, and vomited during examination. The temperature was subnormal; vomited matter was mucous, bile-stained, and contained clots of fresh blood, as did the fæces, diarrhœa having set in. Mouth clean, tongue furred but moist, chest normal except for the few moist râles previously noted; heart sounds were normal, but weak and rapid; pulse weak; on palpation of abdomen general tenderness was found, especially marked over region of stomach and umbilicus. No rigidity, no swelling of joints or enlargement of glands.

Course of Case.—A provisional diagnosis of acute gastro-enteritis was made until urine and fæces could be examined, and a bismuth carb., salol, and morph. mixture prescribed; peptonised food with brandy was given in very small quantities at frequent intervals, as it was imperative that the patient should obtain some nourishment at once. Later in the day, as all food was returned, nothing but ice to suck and small frequent doses of brandy were given. In the evening, during an attack of coughing and vomiting, an *Ascaris lumbricoides* was expelled; this eased the coughing and straining considerably, and an hour or two afterwards another worm was passed in the fæces. We then decided to treat the case as one of acute ascariasis. On the second day a hypodermic injection of strych. c. digitalin was given, and a draught of santonin gr. v., salol. gr. v. in syrup of senna administered. This was followed later by calomel gr. v. Vomiting and cough were less, and more nourishment was retained. During the morning of the third day a free evacuation of the bowels resulted in the expulsion of eight large worms, two more being vomited during the night. On the fourth day a second santonin and salol draught was given, followed by calomel gr. iv.; free evacuation resulted in the expulsion of six more worms, and the patient only had two attacks of coughing and vomiting, each time expelling two ascarides. The evening of the fifth day brought to light three more worms during attacks of coughing and vomiting, and three others were passed in the fæces. On examining the fæces passed, in addition to the ascarides, two whip worms (*Trichuris trichiura*) were found. The patient, although very

weak, was much better. Vomiting had almost ceased, and she was retaining Benger's food quite well and in useful quantities. Early on the sixth day two more worms were vomited, after which vomiting and coughing ceased entirely; the pulse improved, diarrhœa cleared up, the tongue was clean, and the patient felt hungry and was improving rapidly. The bismuth and morph. mixt. was replaced by one of bismuth carb. and nux vomica.

From the sixth day onwards the patient did not look back; the chest cleared, heart recovered, and all acute symptoms disappeared after the expulsion of the worms. A total of 30 worms (actually seen) were passed, and although by no means a record, was quite beyond the usual number found.

The case presented a good field for differential diagnosis, the symptoms were acute, and the condition to which the patient was reduced was critical; as a rule, such acute cases are only found abroad or in the pages of text-books.

Medical Societies.

CAMBRIDGE UNIVERSITY MEDICAL SOCIETY.

THE inaugural meeting was held in the Anatomy School, Cambridge, on May 10th, Mr. E. S. FELLOWES-FARROW, the President, being in the chair.

The PRESIDENT, in introducing Dr. W. Langdon Brown, referred to the valuable work done by him in bridging the ill-defined gap between physiology and clinical medicine, and pointed out that it is one of the objects of the society, which is essentially for students, to correlate the work of the physiology and anatomy schools with work at the bedside.

Dr. LANGDON BROWN then read a paper on the Endocrine Glands and their Relationship to the Sympathetic Nervous System, which was followed by a short lecture by Dr. W. L. H. DUCKWORTH on the Operation of Thyroidectomy. Both paper and lecture were greatly appreciated by the audience, whose numbers and enthusiasm indicate a successful and useful future for the society. The honorary vice-presidents of the society are Sir Clifford Allbutt, F.R.S., Prof. J. B. Bradbury, Prof. F. G. Hopkins, F.R.S., Prof. J. N. Langley, F.R.S., and Prof. J. T. Wilson. Mr. Norman F. C. Burgess is vice-president, Mr. C. L. Owen hon. secretary, and Mr. T. F. McNair Scott hon. treasurer.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on May 2nd, with Dr. WILLIAM WYLLYS, the President, in the chair.

Mr. N. S. CARRUTHERS read a short paper on

The Septic Tonsil,

and described a method of tonsillectomy. He said that the presence of pus in a tonsil was not an evidence of sepsis, but in many instances was a visible proof that the tonsil was fulfilling its function—viz., that of protecting the system against infection. The significance of the pus entirely depended upon where it was found, if confined to the crypts of the tonsil it was not pathological; but when the body of the tonsil was invaded by micro-organisms it was evidenced by a red and angry appearance of the mucous membrane, fixation of the tonsil, and by an involvement of the glands of the neck. When the removal of tonsils was indicated, he considered that the only satisfactory operation was enucleation. He used a combined gag and tongue depressor, and a special suction apparatus for siphoning away any blood or mucus during the operation. The patient was placed with his head below the level of his body, the tonsil was dissected out from below upwards instead of from above downwards, and he was particularly careful to remove the lingual prolongation of the tonsil, as this was often found to be septic. Mr. Carruthers exhibited the instruments he used and also showed a patient, a young man who had had his tonsils enucleated some time ago, in whom a considerable amount of lymphoid tissue had developed at the site of the enucleated tonsils. This was attributed to an endeavour on the part of nature to make up the deficiency of protective tissue due to the removal of the tonsils.

Dr. H. R. MAYO read a paper on

Appendicitis in the Middle East,

wherein he gave his experiences as a surgeon in Mesopotamia, and dealt with the differences caused by race and environment in the disease. Among Indians he had met with only two cases. On the other hand, Indians suffered very much from intestinal worms, and did not appear to be liable to dental caries. These differences he attributed to diet, since Indians rarely ate meat, and consumed many raw fruits and vegetables. He had noticed that appendicitis was more common among the cavalry and artillery than among infantry men, possibly because the former had less time for their own meals, having to attend to their horses. Diagnosis was often very difficult between appendicitis, dysentery, and, in some cases, tuberculous disease of the cæcum, which was common in Indians. The rise of temperature occurring after operations for appendicitis in the East was often due not to sepsis but to malaria, and was relieved by quinine. Post-operation vomiting was not frequent, but it had a direct relation to the patients' consumption of alcohol. Constipation was often very troublesome, and was aggravated by the almost universal difficulty he found amongst patients in using the bed-pan. In his appendix operations he found a greater amount of adhesions than was usual in this country. Owing to the great heat it was necessary to use much lighter and more porous dressings in the Middle East than at home. Dr. Mayo gave details of several of his cases, which illustrated well the various points he had referred to.

LIVERPOOL MEDICAL INSTITUTION.

THE last meeting of the session was held on April 27th, with Dr. J. HILL ABRAM, the President, in the chair. Dr. F. W. BAKER YOUNG read a paper on

Syphilis of the Nervous System,

with special reference to intrathecal therapy, based on the treatment of 109 cases of late syphilis and parasyphilitic conditions of the cerebro-spinal system. The results of the treatment of these cases by intrathecal injection of reinforced salvarsanised serum was demonstrated and the findings in the cerebro-spinal fluid were correlated with the change in clinical symptoms. Dr. Young held that this method of treatment was effective in cases which were not influenced by any other therapy and emphasised the importance of adopting this treatment in progressive cerebro-spinal syphilis.

Prof. W. H. ROBERTS recounted the results of his work on the estimation of the arsenical content of the cerebro-spinal fluid. He had found no trace of arsenic in the fluid after intensive intravenous treatment, but had shown the presence of arsenic in 19 cases out of 29 one week after intrathecal injection. The proportion of arsenic varied from 0·5 to 2 parts per million.—Dr. L. S. ASHCROFT supported the paper from the pathological side.—Dr. A. DOUGLAS BIGLAND criticised the procedure preferring the older methods of treatment, which were effective and less troublesome.—Dr. R. STOPFORD TAYLOR also favoured the older method of treatment.

Prof. R. J. M. BUCHANAN read a paper on

Appendix Dyspepsia.

In a brief historical sketch of the development of the diagnosis and the surgery of the appendix, Prof. Buchanan referred to the so-called pelvic abscess in women, which was formerly opened by gynæcologists and was, in his opinion, appendicular in origin. He referred to the appendix as the mimetic organ of the abdomen, and in this connexion reviewed the early literature of appendicitis and its gradual recognition and separation from the other better known

acute conditions, such as perforated peptic ulcer, cholecystitis, volvulus of small intestine, ruptured ovarian cyst, pleurisy, and pneumonia. In chronic conditions the appendix was even more mimetic. Chronic appendicitis and peptic ulcer were closely allied in symptomatology, and operations for peptic ulcer frequently revealed a chronic appendicitis as the cause of the symptoms. Important points in diagnosis he indicated as follows. Radiation of epigastric pain to the lower abdomen suggested appendicitis as did tenderness over the appendix area. The relief of pain experienced by cases of peptic ulcer after taking food was not felt by patients with appendicitis, and over long periods no alteration in free HCl was noticeable in these patients. The dorsal pain of ulcer was rare in appendicitis, and alkalis and bismuth rarely gave relief. There was not the same constancy of pain referred to meals and not the same intensity of pain—merely discomfort. Appendix pain was increased by exertion; there was no complete remission of pain or dyspepsia, such as occurred sometimes in cases of duodenal ulcer. Prof. Buchanan referred to a case of chronic appendicitis simulating hour-glass stomach by X ray examination, but manifesting tenderness over the appendix area. Laparotomy demonstrated an inflamed appendix, the X ray hour-glass appearance being doubtless due to reflex spasms, since appendicectomy relieved all symptoms. Many cases of so-called ovaritis on the right side were really chronic appendicitis; a median incision was advocated. In the association of chronic appendicitis with colitis, the appendix was often the harbour of infective noxa. Prof. Buchanan instanced one case of diarrhœa persisting for many years where Dr. Cronin Lowe obtained an almost pure culture of *Bacillus enteritidis* in the stools. The appendix on removal was found to contain a pure culture of the organism. Operation combined with an autogenous vaccine led to complete recovery and the disappearance of the organism from the stools. Chronic appendicitis was often associated with distended cæcum and a vascular Jackson's membrane; in these cases besides appendicectomy plication of the cæcum should be performed. Appendix pain was referred to all regions of the abdomen, even down the right thigh; retrocæcal inflamed appendices simulated lumbago and cholecystitis. Discussing the X ray appearance in appendix disease, Prof. Buchanan thought that an appendix which filled and retained barium or bismuth after the cæcum had emptied should be removed. He held that in any cases of chronic and obscure dyspeptic symptoms chronic appendicitis should be suspected.

MR. W. THELWALL THOMAS alluded to the frequency of cases of vague abdominal symptoms, described as indigestion, which often could not be definitely referred to the contents of the upper abdomen. X ray examination in recent years had greatly assisted in clearing up the difficulties of diagnosis between gall-stones, gastric or duodenal ulcer. There remained many cases which could be referred to the appendix, and here radiology in expert and shrewd hands materially helped with the diagnosis. The association of alternate constipation and diarrhœa, accompanied by pains in the right iliac fossa and referred on pressure to the remote parts of the abdomen, was strong evidence of chronic appendix trouble. He was not prepared to admit hæmatemesis as a sign, having seen some cases where, after removal of the appendix, the bleeding reappeared. Where the cæcum was dilated and proptosed into the pelvis with a well-marked Jackson's membrane, he removed this tissue, infolded the cæcum, and fixed it in the iliac fossa with satisfactory results.

MR. THURSTAN HOLLAND showed a number of lantern slides illustrating the various points of importance in the X ray examination of the appendix. There was, as a rule, no difficulty in seeing the appendix. In his experience the appendix was seen just as often after the ordinary barium meal as after the much vaunted buttermilk meal. Of the value of an X ray examination of the appendix in cases with vague gastric symptoms there could be no doubt.

Reviews and Notices of Books.

TEN POST-GRADUATE LECTURES.

Delivered before the Fellowship of Medicine at the House of the Royal Society of Medicine, 1919–20. With a Preface by Sir CLIFFORD ALLBUTT, P.C., K.C.B., M.D., F.R.S. London: John Bale, Sons and Danielsson, Ltd. 1922. Pp. 216. 10*s.* 6*d.*

IF, as we hope, this admirable volume is the first of a series, its issue will serve a double purpose. It will not only enable those privileged to attend the post-graduate lectures arranged by the Fellowship of Medicine to give attention to the general arguments enunciated undistracted by the effort to memorise details of technique or dosage, but those who are less receptive to aural impressions, or are unable to attend, will not be so heavily penalised by these circumstances. In a philosophical preface Sir Clifford Allbutt points out that if the full resources of modern medicine are to be made available, some sort of post-graduate intercommunication and coöperative practice is essential. The results of one individual's experience are now inadequate if the doctor is to do justice to his patient, and the help of others must be enlisted.

In the present volume lectures by the late Sir George Savage on syphilis in insanity and on morbid mental growths are included. Sir William Hale-White discusses the prognosis of exophthalmic goitre, and Sir Humphry Rolleston describes grave familial jaundice of the newly born. The value of combined treatment, with special reference to surgery, electricity, and X rays, is emphasised by Dr. F. Hernaman-Johnson, and the after-effects of anæsthetics are dealt with by Mr. J. D. Mortimer. Dr. Wilfred Harris on chronic paroxysmal trigeminal neuralgia and its treatment summarises the indications for and results of his well-known method of alcohol injection in these cases, and Dr. N. Mutch deals with pyorrhœa alveolaris and its relationship to disease. Finally, Mr. W. H. Trethowan describes disabilities of the feet due to static or mechanical causes and those due to paralysis, with advice on their prevention and treatment. Every one of the subjects discussed is thus of the utmost importance to the practitioner, and the names of the lecturers are those of acknowledged experts.

Text-books, which are mainly designed for undergraduates, may be years behind practice. The value, also, of confidential pamphlets, detailing arguments in support of a particular instrument, treatment, or drug furnished by interested parties, cannot always be assessed by a busy practitioner without help. The very help that is needed, as well as the modern aspect of the contributions, make the volume valuable and we anticipate for it a wide sale. The information contained is arranged in the manner most convenient and helpful to the man in general practice.

STUDIES FROM THE ROCKEFELLER INSTITUTE.

Reprints. Vol. XXXIX. New York: Rockefeller Institute for Medical Research. 1922. Pp. 662.

THIS volume of 43 collected papers maintains the high standard of publications from this active centre for research in all branches of medical science. Notable papers among the collection are those by P. K. Olitsky and F. L. Gates on Influenza, by H. Noguchi and I. J. Kligler on Yellow Fever, Jacques Loeb on Osmosis and the Physical Properties of Proteins, and a series of valuable papers on Pancreatic Diabetes by F. M. Allen and various collaborators. Perhaps the paper of the highest scientific value is that by D. D. Van Slyke on the Carbon Dioxide Carriers of the Blood; this gives a summary of work done on the subject up to the time at which the review appeared. J. H. Austin, E. Stillman, and D. D. Van Slyke also contribute a highly technical paper on the factors governing the excretion rate of urea; since

the rate of urea excretion is used as a criterion of the functional capacity of the kidney, the attention which they have devoted to the subject will be amply repaid in the future, for until more is known of the conditions of urea excretion "the subject must be regarded as an object of investigation rather than as an aid in clinical investigations." F. G. Blake and J. D. Trask add two valuable papers on measles; this they induced in monkeys by intra-tracheal injection of nasopharyngeal washings from patients in the prodromal stages of the disease, and which can be transmitted to other monkeys by blood transfusion. The work of L. E. Holt and H. L. Fales on the food of children is annotated in this issue of THE LANCET.

THE VITAMINS.

By H. C. SHERMAN, Professor of Food Chemistry, Columbia University; and S. L. SMITH, Specialist in Biological and Food Chemistry, U.S. Department of Agriculture. American Chemical Society Monograph Series. New York: Chemical Catalog Company. 1922. Pp. 273. $4.

FOR workers on the vitamins this volume will prove a welcome handbook, supplementing in greater detail the excellent report by the Medical Research Council, which appeared in 1919. It will be chiefly used as a work of reference, for which purpose the bibliography of 25 closely printed pages will prove most serviceable. Full credit is given to English workers, both in the text and in the bibliography, and the digest of all the principal American work should prove useful to investigators in this country to whom the original sources of information are not open. Chapter I. is an historical introduction, Chapters II. to IV. deal with vitamins B, C, and A respectively, and Chapter V., which is the last, with the relation of vitamins to the problem of food-supply. We are glad to see that the authors lay stress on the importance of quantitative experimentation in the investigation of vitamin problems.

The book is thoroughly well written, and is as interesting as such a condensed account can be made. A work summarising all that is important in more than a thousand original papers published during the past ten years cannot fail to be welcome. Incidentally, the small bulk of the book is a clear indication that of the thousand odd original papers of which it represents the digest many contain little real substance. When many special scientific journals are oppressed by production expenses, it is sad that authors should load them to the danger-point with reprints of laboratory notebooks.

SEXUOLOGY.

Die Lehre von den Geschlechtsverirrungen. By Dr. J. SADGER. Vienna: F. Deuticke. 1921. Pp. 458. M.105.

IN this volume Dr. Sadger, a Vienna neurologist, who is a disciple of Freud, gives some measure of chapter and verse for the assertions as to infantile sexuality which Freud himself hands the student —to take or to leave. The "castration complex," to give an instance, is traced out in primæval rite (circumcision), in myth, in infantile reminiscence, and in the subconscious mentality of neurotics and paranoiacs—as regards the last two sources, or at any rate the last one, by the help, of course, of psycho-analysis. And this is where the appeal of Freudism loses in general acceptance, in that many of the arguments used appeal fully only to the converted—i.e., to practising psycho-analysts. A more serious, and admitted, objection is that the clinical material is pathological, whereas the deductions are carried well into the normal sphere. Thus the case for referring lingual sexual phenomena to obsessions persisting from suckling days is much weakened when one recalls their prevalence and physiological utility in the lower animals. In animals Dr. Sadger is not quite correct, either, in denying any occurrence of perversions: Moll, for instance, records a case. Again, the attribution of masochism to infantile subjection obviously suffers from the fact that masochists are mostly males; and that of fetichism to infantile ideas of maternal incest, from Freud's statements that neurotics never show it. Notwithstanding these objections, the work is impressive as a worthy demonstration of the way in which psycho-analysis may work out the finer pathology and physiology of sex, serving the purpose to sexuology that the microscope has done to naked-eye pathology. But the early microscopists made some mistakes.

Vice and Health. By J. C. FUNK, M.A., Director, Bureau of Protective Social Measures, Pennsylvania. Philadelphia: J. B. Lippincott Company. 1921. Pp. 174. 6*s*.

THIS is a popular little book on prostitution in America. The author's remedy is wholesale suppression; the "passage and enforcement of regulative ordinances" and the "utmost scrutiny" by the police department of not only the commercial organisers of the social evil, but of dance-halls, hotels and their staffs, taxi-cab drivers, and so on. It is scarcely credible that there is here no mention of female poverty and male riches as factors in prostitution. Inequality of possessions can still less be prohibited than alcoholism or tuberculosis.

A LETTER BOOK.

Selected with an Introduction on the History and Art of Letter Writing. By GEORGE SAINTSBURY. London: G. Bell and Sons, Ltd. 1922. Pp. 306. 6*s*.

ALL lovers of literature and letters, in the epistolary sense, will owe a debt of gratitude to Prof. Saintsbury for this delightful selection and for its illuminating introduction. It is true that, as in all anthologies, any one reader will probably find that some particular specimen for which he has special regard has been omitted—we ourselves should have liked more of Cowper; but, taken as a whole, the collection is most satisfying. We are particularly grateful to Prof. Saintsbury for directing, in his introduction, his readers' attention to the two letters of Ahasuerus concerning the persecution and the reverse of the Jews, given in the Septuagint version of the book of Esther. Mutatis mutandis, they might be the pronouncements of many statesmen concerning the Bolshevists.

To come to the letters themselves, we begin with five: the first two from Synesius, the fourth-century Bishop of Ptolemais, an admirable example of the church militant; the third from Pliny the younger; the fourth from Sidonius Apollinaris, also a bishop; and the fifth from Mary, Duchess of Burgundy in the twelfth century, a most business-like letter concerning a marriage. Then there is a jump of three hundred years to the Paston letters of the fifteenth century. Among other writers of letters from whom selections are given, are Ascham, Donne, Evelyn, Gray, Cowper, Walpole, Sydney Smith, Macaulay, and Thackeray. Prof. Saintsbury not only gives a letter of Thackeray's own, but two written by him "in character"—namely, the famous *Spectator* letter from "Esmond," and the Horace Walpole one from the "Virginians." A most interesting letter is by Evelyn concerning medical and other scientific subjects. Evelyn mentions among other matters that he used to bathe his head with a decoction of hot and aromatical herbs, and after this, "I immediately cause abundance of cold fountain water to be poured upon me *stillatim*, for a good half-hour together: which for the present is not only one of the most voluptuous and grateful refreshments imaginable, but an incredible benefit to me the whole year after. . . ." In a novel of Mayne Reid, called, if we remember rightly, "The White Chief," the dropping of cold water on the head for half an hour was used as an unbearable torture, and other novel-writers have repeated the idea, which Evelyn exposes as nonsense.

Evelyn refers to the "masters of catoptrics, phonocamptics, ..." and Prof. Saintsbury in his notes referring to the latter word says: "I do not remember seeing it elsewhere, ... it should mean 'the art of guiding and managing the voice.'" Phonocamptics are that branch of physics which treats of the reflection of sound waves.

CHEMISTRY.

An Introduction to Organic Chemistry. By D. LL. HAMMICK, Fellow and Lecturer, Oriel College, Oxford. London: G. Bell and Sons. 1921. Pp. 258. 6*s*.

IN this volume the author has attempted to develop the principles of organic chemistry from the experimental side and to make such development follow as logical a sequence as possible. The book is not intended to cover any particular syllabus and has not been planned as a formal text-book. The student who uses the book is assumed to be familiar with the ordinary operations involved in organic laboratory practice. Much of the experimental work is intended for coöperative treatment. In many respects the work is pleasing as the different subjects are presented in an interesting and to some extent a novel manner. There are a few errors and loose expressions which should be rectified in a subsequent edition. Thus, in discussing enzymes, the statement is made that "*invertase*" turns "invert" or cane sugar into glucose and fructose. Readers are also informed that "diastase converts starch into maltose"; nothing is said about the production of the accompanying dextrins. Elsewhere we read that in estimating carbon and hydrogen in organic compounds by the combustion method, not more than 2 g. of the substance should be weighed out. Obviously 0·2 g. is the figure intended.

Introduction to General Chemistry. By H. COPAUX, Professor of Mineral Chemistry, Paris. Translated by Dr. H. LEFFMANN. Philadelphia: P. Blakiston's Son and Co. 1921. Pp. 195. $2.

THE subject-matter of this little book is presented in a lucid manner. It deals with the idea of the element, laws of chemical combination, atomic theory and chemical formulas, general characters and interrelations of the elements, properties and theory of solutions, chemical affinity and thermo-chemistry. On looking through the volume one realises it will be useful not only to the student but to those whose knowledge is not as up to date as it should be.

DENTISTRY.

Notes on Dental Anatomy and Dental Histology (Human and Comparative). Fourth edition. By T. W. WIDDOWSON, L.D.S. Eng. London: Bale, Sons and Danielsson. 1922. Pp. 238. 15*s*.

THIS book belongs to the tabloid class, representing a boiled-down summary of the main facts to be found in the text-books of C. Tomes and J. H. Mummery. Used in the proper way as ancillary to the larger books, it should serve a useful purpose, but if the student should attempt to rely on it alone, it may prove a snare and a delusion. Comparative dental anatomy is a subject that the average student finds difficult to acquire; often he has not sufficient general knowledge to enable him to appreciate the evolutionary process which it illustrates so admirably, with the result that instead of appearing rational and even fascinating, it resolves itself into a collection of uninteresting facts and obscure theories which entail a severe strain on the memory. Such a book as this, which surveys a huge field of biology in some 200 pages, tends to accentuate the difficulties of the student, for the chain of reasoning which makes the sequence of facts logical and intelligible in the larger text-books, cannot of necessity be reproduced here. Only the bones, and they are very dry bones, are left in this treatise.

But it would be unfair to blame Mr. Widdowson for a defect common to almost all books of this nature. This is admittedly a notebook based on larger works; we cannot expect it to be more accurate or up-to-date than its parents, but it should at least be no less so. Further, discrimination should be used in the selection of facts. It seems hardly necessary nowadays to mention the view of Klein that the dentinal fibrils are not connected with the odontoblasts, but pass between them to the deeper cells of the pulp. In describing the termination of the nerve fibres of the pulp, reference is made to the earlier work of Mummery, in which he showed that they passed into the dentinal tubes. There is no reference, however, to his later work in which he demonstrated the presence of a layer of nerve cells beneath the odontoblasts. It may be doubted whether it is still necessary to devote three pages to an account of the various hypotheses which have been put forward at different times, of the terminations of the nerves of the pulp, in view of the general acceptance of Mummery's work.

The book is provided with a good index, and on the whole may be recommended as a useful addition to the working library of the dental student. It is not free from misprints.

Golden Rules of Dental Mechanics. By HAROLD OSBORN. Bristol: John Wright and Sons, Ltd. 1921. Pp. 95. 5*s*.

THIS little book sets out in a convenient form useful short practical notes on the subject of dental mechanics. Part I. deals with plaster work, vulcanite work, and the process of vulcanising. Part II. with sand moulding and dentures made with metal bases. The subject of gold casting is treated in Part III., and in the next section there is a valuable collection of tables and formulæ. The last part of the work deals with the various chemicals employed in the dental laboratory. It is easy to decry such unambitious books, but in this case the author has given us a work which will be of great value to the dental mechanic, for whose use it has been written.

JOURNALS.

BRITISH JOURNAL OF SURGERY.—In the April issue Sir D'Arcy Power contributes his fourth Eponym—viz., William Hey, of Leeds—describing Hey's amputation, saw, ligament, and hernia.—J. E. McCartney and John Fraser report an investigation into 56 cases of pneumococcal peritonitis in children, and concludes that there are two essential types of case, primary and secondary. They suggest that the former is peculiar to the female sex, and is the result of an ascending infection from the genital tract, starting as a pelvic peritonitis, and showing an introductory and a septicæmic stage. The mortality may be markedly lowered by blood transfusion at the commencement of the septicæmic stage.—Sir John Lynn Thomas records a case of epilepsy of 22 years' standing due to a calcified endothelioma in the left lateral ventricle, which he removed successfully.—J. H. Norgate has been using local injections of pituitrin to relieve the pitiable condition of patients suffering from inoperable carcinomata, and he here gives his results in 37 cases.—In similar cases A. S. Gillett and C. P. G. Wakeley have been testing the value of selenium (see THE LANCET, April 22nd, p. 804).—R. Hamilton Russell contributes a discussion on the varieties, mode of origin, and classification of inguinal herniæ, but his theory of the encysted hernia is far from convincing.—Charles A. Pannett's Hunterian lecture on Hydronephrosis is here published. He reviews the whole subject, including the anatomy and physiology of the pelvis and ureters, the genesis of the dilatation, its clinical features, diagnosis, and its treatment. He has explained for the first time the method of production of those hydronephroses, in which no obstruction to the flow of urine can be demonstrated.—Sir G. Lenthal Cheatle reports a case of rodent ulcer with the histologic findings, illustrating the multicentric origin of the growth.—C. Max Page and

G. Perkins bring forward some observations on bone-grafting with special reference to bridge-grafts.—C. P. G. Wakeley reports a late end-result of excision of the os calcis for tuberculous osteitis.—A. Philip Mitchell describes a case of recurrent anterior dislocation of the lower end of the ulna complicated by an ununited fracture of the styloid process of the ulna.—V. Zachary Cope reports a case of multiple papillomata of the small intestine causing recurrent intussusception in an adult, and suggests a new detail of technique for reducing an intussusception.—There follows an interesting account of a visit to the clinic of Prof. Raffaele Bastianelli in Rome, with the story of his introduction of English nursing methods into Italy.—The following rare or obscure cases are reported by various authors:—Arthur Evans: During the course of an operation for double salpingo-oöphorectomy the appendix was found to be inverted into the lumen of the cæcum. Geoffrey Keynes: Duplication of the left ureter was discovered during the necropsy on a patient who had a large cystic swelling in the loin. One ureter drained the lower half of the kidney and appeared normal in every way, but the other had no connexion with the urinary tract below, being very dilated and tortuous and opening into a large hydronephrotic sac above. W. G. Spencer: Death from bilateral thrombosis and gangrene of the lower extremities following an operation for exophthalmic goitre. The first sign of the thrombosis occurred four days after operation, and death on the twelfth. C. J. Marshall: Traumatic aneurysm of the splenic artery as the result of a revolver wound in the abdomen, which ruptured five months later, and was cured by ligature. Lennox Gordon: A sacculus of the urinary bladder which ruptured during micturition. The sacculus was the result of back pressure due to a stricture of the urethra; the rupture was situated at the very apex of the bladder, which accounted for a very misleading feature in the examination of the case—viz., that over 20 oz. of urine were withdrawn by catheter after admission.

The number closes with a review of books and the index to Volume IX.

ANNALI ITALIANI DI CHIRURGIA. Vol. I., No. 1. Naples: Aldina.—The first number has reached us of a new Italian journal devoted to surgery. It is issued under the auspices of four well-known professors of surgery—Pascale and Roncali of Naples, Muscatello of Catania, and Alessandri of Rome. Its scope appears to be the same as that of the *Archivi Ital. di Chirurgia*, in that it offers a large field for the publication of the work of the various university clinics.—The introductory article is an address on the value of clinical work, by Prof. Pascale.—A contribution by Prof. Alessandri, on some clinical aspects of mesogastric ulceration confirms the conclusions arrived at by many authors, but not generally accepted, that a diagnosis of gastric or duodenal ulcers cannot be founded on chemical investigation alone, but that it may be asserted that, in the duodenal, hyperacidity and hyperchlorhydria are the rule, while in the gastric, and especially with ulcers at a distance from the pylorus, there is hypoacidity and hypo- or even achlorhydria. He also confirms the opinion now held by many surgeons that simple gastro-enterostomy does not give good results in ulcers of the lesser curvature. From his own operative experience he concludes that circular resection of the stomach secures the ordinary emptying of the organ in the same time as in a normal stomach, and in a shorter time than that required after gastro-enterostomy. Moreover, after mediogastric resection the stimuli which usually cause spastic conditions are much less active than in the normal stomach or after gastro-enterostomy, and, consequently, the stomach treated in this way is much less exposed to pyloric spasm and its consequences, pain and hypochlorhydria.—Prof. Pascale describes four cases of traumatic aneurysm, two of them arteriovenous, operated on by him by total extirpation of the sac.—Dr. N. Piccaluga has conducted a number of experiments to show the effects of radium emanation on tumours in mice, and his communication on his results seems to show that a certain preventive action, not lasting, was noticeable on the growth of the grafted neoplasms.—There is an interesting synthetic review on congenital cysts and fistulæ of the neck by Dr. De Gaetano, and also a large selection of extracts from Italian and foreign sources. The number terminates with an excellently arranged bibliographic bulletin.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXV. No. 2.—The Constitution of the Normal Hæmolysin of Ox Serum for Guinea-pig Blood, by N. Yoshinare (Glasgow). Ox serum normally dissolves the red corpuscles of the guinea-pig. Previous attempts to explain this along the usual lines of an immune-body-complement system have been unsatisfactory. The author shows that the peculiarities of this particular reaction are due to the relative lability of the immune-body, its poor combining affinity for red corpuscles, and the presence of inhibitory substances in the serum.—The Bactericidal Action upon Calf Lymph of Certain Triphenylcarbinol Dyes and their Leuco-compounds: Immunity and Hypersensitiveness towards Vaccinia Variolæ, by M. Coplans (London).—Precipitins and the Ætiology of Serum Sickness, by S. Wyard (London). It has been supposed that precipitins in the blood have some connexion with the occurrence of serum sickness. They are not infrequently demonstrable in human serum after a dose of horse serum, but the incidence of symptoms has no definite relation to their presence.—Gastric Glands in the Extroverted Distal End of the Vitelline Duct, by G. W. Nicholson (London). An interesting case is described of persistent vitelline duct in an infant in which the main part within the abdomen was lined with a mucous membrane proper to the small intestine, while the extroverted end formed an umbilical polyp with a pyloric gastric mucosa. Rejecting the idea that stomach cells, or cells destined to become stomach, could have been displaced to this curious situation, the author points out that the cells of the endoderm are able to differentiate to columnar or squamous epithelium, and that the former develops more fully into the characteristic mucous membranes of the different parts of the gut. These characters are to a certain extent interchangeable during the autogeny of the individual. All of which, he points out, must mean that environment plays a considerable part in differentiation.—The Histology of Destructive Changes in Icteric Livers, by E. Schwarz (New York). Obstruction of bile-ducts within the liver or of the common bile-duct leads to distension and thus rupture of the inter- and intra-cellular canaliculi with subsequent destruction and often partial regeneration of liver cells.—The Fat of Adipose Tissue in Malignant Disease, by A. N. Currie (Glasgow). The iodine value of connective-tissue fat from different parts of the healthy body is uniform. In malignant disease there is much more diversity, and on the whole the fat is more unsaturated. The high pigment content of fat in malignant disease is noted, and suggestions are made of its relation to unsaturation.—The Effect of Thyroid Feeding on the Bone Marrow of Rabbits, by R. K. S. Lim, B. B. Sarkar, and J. P. H. G. Brown (Edinburgh). Thyroid feeding produces first an increase and later a decrease of polymorphonuclear leucocytes.—Complement-Fixation Tests in the Diagnosis of Tubercular Infections, by A. Sellers and E. N. Ramsbottom (Manchester). After trying various preparations of tubercle bacilli, the authors conclude that the method is not a reliable means of clinical diagnosis, especially on account of the so-called non-specific reactions, though it may throw light on the pathology and progress of the disease.—The Proteolytic Enzyme of *Bacillus Pyocyaneus* and the Inhibition Produced by Normal and Immune Sera, by C. E. Dukes (London). The serum of both normal and treated rabbits inhibits more or less the proteolytic ferment produced by *B. pyocyaneus*. But antiferments are not produced by inoculation with the ferment, the effect observed being due to

the action of the precipitin which is formed.—A Mechanism Maintaining the Negative Pressure in the Pleura and Influencing Absorption, by T. W. Wadsworth (Liverpool). In the absence of some arrangement to prevent it, the pleura should normally contain large quantities of fluid. Particulate matter readily passes from the pleural cavity to the parietal subpleural lymphatics and not by phagocytosis but by the pumping action of the respiratory movements.—Further Observations on the Wassermann Test with Prolonged Fixation at Ice-chest Temperature, with a Note on Tests with Bordet's Antigen, by E. J. Wyler (Hilsea).—A Case of Acute Ulcerative Endocarditis in a Child aged 3½ weeks, by J. E. McCartney (Edinburgh). From the lesions there was isolated a non-hæmolytic streptococcus: infection not through the umbilicus.

QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE. Vol. LXVI., Part I.—The present volume, like the last, is under new editorship in that Sir Ray Lankester ceases from active editorship and becomes honorary editor, while Prof. E. S. Goodrich, of Oxford, assumes the duties of editor in chief with a staff that remains the same as in recent years, with the addition only of Dr. G. P. Bidder. In other respects there is no change. The excellence and varied nature of the matter remains the same. Two papers by Prof. J. Brontë Gatenby (who has recently been elected professor of zoology in the University of Dublin) and Mr. R. J. Ludford respectively deal with cytological matter. A very interesting memoir by Dr. K. N. Bahl forms the third part of a study in the structure of the Oriental earthworm genus *Pheretima*, and deals with the development of the nephridia. The newer idea that these organs of excretion are to be traced back to the ectoderm is further elaborated, and it is shown that actual cells migrate into the septa, from the ectoderm, where they form the "funnel-cells."—Other papers are by Mr. H. Ohshima, with a note by Prof. Macbride, on echinoid larvæ, and by Mr. G. C. Robson on the structure of a brackish water mollusc, *Paludestrina ventrosa*.

JOURNAL DE MÉDECINE DE LYONS, March 20th, 1922.—This number of a fortnightly journal, published at the modest price of Fr.1.50, contains certain ophthalmological articles which go to show that Lyons is at the present time an important centre for the study of disease of the eye. The first article is by G. Rollet, professor of ophthalmology at the Lyons school, on Syphilitic Optic Neuritis and Optic Atrophy. It gives an excellent account of the subject, emphasising especially the importance of treatment before the neuritis arrives at the atrophic stage, that recommended consisting of intramuscular injections of mercury alternating with weekly injections of novarsenobenzol in progressive doses. Only in cases of atrophy, whether secondary or tabetic, is treatment powerless.—In the second article, by Louis Dor, on Heterophoria and its Treatment by Prismatic Spectacles, the mistake is made, in our view, of encouraging the wholesale prescription of prisms. The importance of a latent convergence and still more of a latent divergence of 1° we believe to be practically negligible. On the other hand, vertical errors of this amount may need correction in certain cases and the tilting of spectacles, which frequently produces this or larger errors in the vertical direction, should never be allowed to continue. The author relates a case where a hyperphoria of 2° caused a spasm of the orbicularis which disappeared when the patient wore a correcting prism.—Dr. Jacqueau writes on the Treatment of Ophthalmia Neonatorum. The wholesale use of 2 per cent. nitrate of silver is condemned both in prophylaxis and treatment, and the substitution of 25 per cent. protargol recommended. This does not apply to the blennorrhœa of adults.—An article by L. Genet on the Clinical Significance and Prognosis of Retinal Hæmorrhages, gives an excellent account of the subject, except that we miss any reference to the fact that the subhyaloid variety of hæmorrhage has a far better prognosis than the more usual type. The section dealing with the significance of retinal hæmorrhage in various general diseases is especially good, though, as the author says, there is here a wide field still open to investigation. In the case of a diabetic in whose urine sugar was first discovered at the age of 55, and who lived till the age of 77, retinal hæmorrhages were observed during the last ten years of his life. On the other hand, retinal hæmorrhages in syphilis add to the gravity of the condition, especially in old people. The recurrent retinal hæmorrhages of the young occur in conditions of excellent general health and apparently have no significance from the vital point of view. In the cases of arterio-sclerosis and albuminuric retinitis the same, of course, cannot be said.—Finally, an article on Injections of Milk in Ocular Therapeutics, by Dr. Bussy, gives us the idea that this method of treatment has been pushed in France to a remarkable extent. According to this writer its chief rôle is in the treatment of the gonorrhœal ophthalmia of adults.

Reports and Analytical Records.

NEW PREPARATIONS.

(PARKE, DAVIS AND CO., 50–54, BEAK-STREET, LONDON, W., AND DETROIT, MICHIGAN, U.S.A.)

Mercurosal.—This is a new synthetic organic mercury compound (di-sodium-mercuri-salicyl-acetate). It is a white powder put up in small glass tubes of 0·1 g. doses, each dose being dissolved in 5 c.cm. of sterile water and injected intravenously every two or three days for 10 or 12 doses. The manufacturers state that it is an effective spirochæticide with a sufficiently low toxicity to permit of a larger dose being given than is practicable with other mercurials. Treatment with this compound may be alternated with organic arsenic preparations.

Standardised Heart-Extract-Cholesterol Solution.—This antigen is prepared for Parke, Davis and Co. in the Pathological Laboratory, Cambridge, and consists of the usual alcoholic solution of heart muscle with the addition of cholesterol. The preparation has been carefully standardised and full directions as to the dilutions of both antigen and sera are given. It is issued in the ordinary 1 c.cm. ampoule.

Sensitised Serum for Sheep's Corpuscles.—This hæmolytic serum is prepared at Cambridge. As in the case of the above-mentioned preparation, it is issued in the usual type of ampoule and contains 1 c.cm of serum with a dilution index given on the label.

Hemostatic Serum (Lapenta).—This is a serum derivative composed principally of prothrombin, anti-antithrombin, and thrombokinase in physiologically balanced solution. It is a clear solution suitable for intravenous, intraspinal, intraperitoneal, or subcutaneous inoculation, and the dose recommended is 2–5 c.cm. in normal saline. The product contains both equine and bovine sera.

Anti-Anthrax Serum.—Anti-anthrax serum is a serum made by immunising the horse against *B. anthracis* and is suitable for subcutaneous or intravenous injection as a method of treatment. The serum is made up in bottles containing 30 c.cm.

TRÉPOL.

(CHEVAL ET DOUILHET, 22, RUE DE LA SORBONNE, PARIS.)

This preparation, made up in large ampoules ready for injection, is an oily suspension of tartro-bismuthate of potassium and sodium. The compound was introduced by Messrs. Sazerac and Levaditi for the treatment of syphilis in 1921, following upon the work of Sauton and Robert on spirillosis in fowls. It is stated that the administration of tartro-bismuthate in cases of syphilitic chancre produces rapid disappearance of the spirochæte and healing of the lesion in from 6–20 days, according to the severity of the lesion, without the development of secondary symptoms. The compound has also been found of therapeutic value in cases of tertiary syphilis, some of which had resisted other forms of treatment. In a series of 20 cases treated for three months, the manu-

facturers state, on the authority of Drs. L. Fournier and L. Guénot, whose paper was communicated to the Académie des Sciences in October, that six showed a negative Wassermann reaction following treatment. The injections are given subcutaneously or intramuscularly, and each ampoule contains 0·10 cg. of the salt per cubic centimetre of emulsion, previously sterilised at 120° C. Patients are said to tolerate the injections well, the only manifestation of toxicity being a mild form of stomatitis comparable with mercurial stomatitis but more benign than the mercurial form. Trépol appears to be quite stable and is issued also as an ointment for local application and as a tooth powder.

ZOMOGEN: THE NEW RESTORATION FOOD.

(ZOMOGEN FOOD PRODUCTS, LTD., 63, YORK-PLACE, EDINBURGH.)

Zomogen is put forward as an adjunct to the treatment of conditions associated with impoverished blood production, and claims to be a concentrated food containing proteins, hæmoglobin, lecithin, cholesterin, potassium salts, phosphates, and vitamins. Only physiological experiments can confirm the presence of vitamins, but the statement of the manufacturers as to the other constituents is correct. On examination we found the preparation to contain dry extract 40 per cent., of which 26·8 per cent. was proteins, mineral matter 1·6 per cent. containing phosphates and potassium, and water 60 per cent. The preparation is agreeable to the palate.

NON-CONGEALABLE COD-LIVER OIL.

(ALLEN AND HANBURYS, LTD., 37, LOMBARD-STREET, LONDON, E.C. 3.)

We have received a sample of the new season's cod-liver oil from the Lofoten factory. The oil is very pale in colour, with slight odour and bland taste, with a minimum of fishy flavour. It is non-coagulable at 0° C., has a S.G. of 0·924, and a refractive index at 20° C. of 1·4789. The chemical properties of the oil are given as follows:—

		B.P. Standards.
Acid value	0·45	2·5 (max.).
Saponification value	185	179–192.
Iodine absorption value ..	167	155–173.
Unsaponifiable matter	0·67	Not more than 1·5.

The oil is prepared with a minimum of exposure to conditions favouring oxidation, a precaution known to be of importance in the preservation of the activity of A-vitamin, to which, in large measure, the value of oleum morrhuæ is attributed. The low acid value and the iodine absorption figure indicate a high content of unsaturated metabolised fat, and suggest a product of therapeutic efficiency.

GENUINE CROWN MALT EXTRACT.

(KING'S BREWERY, COPENHAGEN. AGENTS: FREMLIN BROS., LTD., DANES-ROAD, CAMBERWELL, LONDON, S.E. 5.)

This preparation is a liquid form of malt extract, prepared from a hot aqueous infusion of malt which has then been submitted to a slight alcoholic fermentation. When analysed the extract was found to have the following composition:—

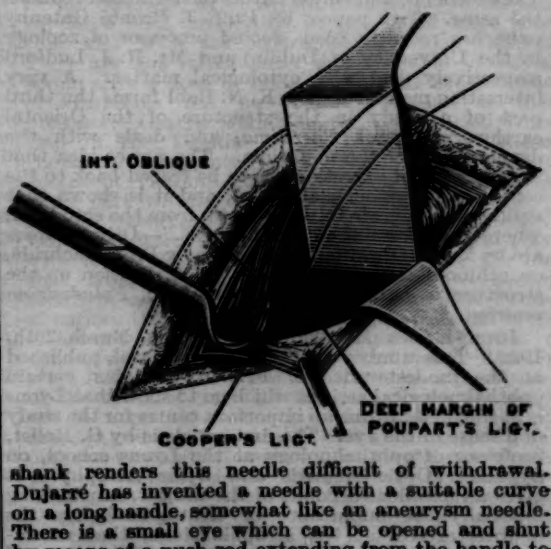
Water	84·9	per cent.
Alcohol	0·26	,,
Acidity (as lactic acid)	0·2	,,
Malt extractives	14·62	,,

Of the extractives 69·4 per cent. was reducing sugar (estimated as maltose) and 9·0 per cent. dextrin. The specific rotatory power was $[\alpha]_{D\,19} = +113·7$. The mineral matter present amounted to 0·2 per cent. and consisted mostly of phosphates. The agreeable palate and flavour of the extract is enhanced by the "condition" resulting from the alcoholic fermentation, and in this respect it differs materially from other malt extracts on the market. An examination for preservatives afforded negative results. The manufacturers claim that the Crown malt extract is a nutritious and invigorating preparation, restores loss of appetite, and is a valuable tonic.

New Inventions.

IMPROVED INSTRUMENT FOR THE RADICAL CURE OF FEMORAL HERNIA: INGUINAL METHOD.

THE great difficulty in the inguinal method for the radical cure of femoral hernia is to obtain a suitable instrument for the suture of Cooper's ligament to the deep border of Poupart's ligament and the lower border of the internal oblique. Cooper's ligament is situated so deeply that it is a matter of some difficulty to place a needle containing the suture through it without either (1) the point of the needle sticking into the bone, or (2) the point of the needle turning over after it has emerged from the ligament. When the latter occurs, especially when the outermost stitch is inserted, the occasion gives rise to some anxiety owing to the proximity of the external iliac vein. Symond's needles have been largely used on account of the completeness of the curve, but the long



shank renders this needle difficult of withdrawal. Dujarré has invented a needle with a suitable curve on a long handle, somewhat like an aneurysm needle. There is a small eye which can be opened and shut by means of a push-rod extending from the handle to the eye. This instrument appears serviceable for the purpose, but, I should imagine, is somewhat apt to get out of order. It has occurred to me that a Cleveland's ligature holder would serve the purpose, but I found that it had certain drawbacks: (1) the point was too blunt, and (2) the curve was not great enough. I have had made a Cleveland's ligature holder with a needle point and with a curve of a halfpenny. With this instrument, as the illustration serves to indicate, the placing of sutures in all three structures is a matter of simplicity. The instrument is passed, first through Cooper's ligament, through the side nearest the bone, until it emerges through the ligament into the pelvis. The holder is then withdrawn, and the lower end of the kangaroo tendon is thrust through the deep border of Poupart's ligament. When all the sutures have been thus placed, the upper end of each suture is seized and made to penetrate the lower border of the internal oblique. By this means the manœuvre, instead of being a difficult and somewhat formidable one owing to the great depth of Cooper's ligament, is rendered easy, and takes little time to perform.

Messrs. Allen and Hanburys, of Wigmore-street, London, W., are the makers of the instrument.

A. E. MORTIMER WOOLF, M.B., B.C. Camb., F.R.C.S. Eng.
Wimpole-street, W.

THE LANCET.

LONDON: SATURDAY, MAY 20, 1922.

The Hospitals of London: Combined Appeal.

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facturers state, on the authority of Drs. L. Fournier and L. Guénot, whose paper was communicated to the Académie des Sciences in October, that six showed a negative Wassermann reaction following treatment. The injections are given subcutaneously or intramuscularly, and each ampoule contains 0·10 cg. of the salt per cubic centimetre of emulsion, previously sterilised at 120° C. Patients are said to tolerate the injections well, the only manifestation of toxicity being a mild form of stomatitis comparable with mercurial stomatitis but more benign than the mercurial form. Trépol appears to be quite stable and is issued also as an ointment for local application and as a tooth powder.

ZOMOGEN: THE NEW RESTORATION FOOD.

(ZOMOGEN FOOD PRODUCTS, LTD., 63, YORK-PLACE, EDINBURGH.)

Zomogen is put forward as an adjunct to the treatment of conditions associated with impoverished blood production, and claims to be a concentrated food containing proteins, hæmoglobin, lecithin, cholesterin, potassium salts, phosphates, and vitamins. Only physiological experiments can confirm the presence of vitamins, but the statement of the manufacturers as to the other constituents is correct. On examination we found the preparation to contain dry extract 40 per cent., of which 26·8 per cent. was proteins, mineral matter 1·6 per cent. containing phosphates and potassium, and water 60 per cent. The preparation is agreeable to the palate.

NON-CONGEALABLE COD-LIVER OIL.

(ALLEN AND HANBURYS, LTD., 37, LOMBARD-STREET, LONDON, E.C. 3.)

We have received a sample of the new season's cod-liver oil from the Lofoten factory. The oil is very pale in colour, with slight odour and bland taste, with a minimum of fishy flavour. It is non-coagulable at 0° C., has a S.G. of 0·924, and a refractive index at 20° C. of 1·4789. The chemical properties of the oil are given as follows :—

		B.P. Standards.
Acid value	0·45	2·5 (max.).
Saponification value	185	179–192.
Iodine absorption value ..	167	155–173.
Unsaponifiable matter	0·67	Not more than 1·5.

The oil is prepared with a minimum of exposure to conditions favouring oxidation, a precaution known to be of importance in the preservation of the activity of A-vitamin, to which, in large measure, the value of oleum morrhuæ is attributed. The low acid value and the iodine absorption figure indicate a high content of unsaturated metabolised fat, and suggest a product of therapeutic efficiency.

GENUINE CROWN MALT EXTRACT.

(KING'S BREWERY, COPENHAGEN. AGENTS: FREMLIN BROS., LTD., DANES-ROAD, CAMBERWELL, LONDON, S.E. 5.)

This preparation is a liquid form of malt extract, prepared from a hot aqueous infusion of malt which has then been submitted to a slight alcoholic fermentation. When analysed the extract was found to have the following composition :—

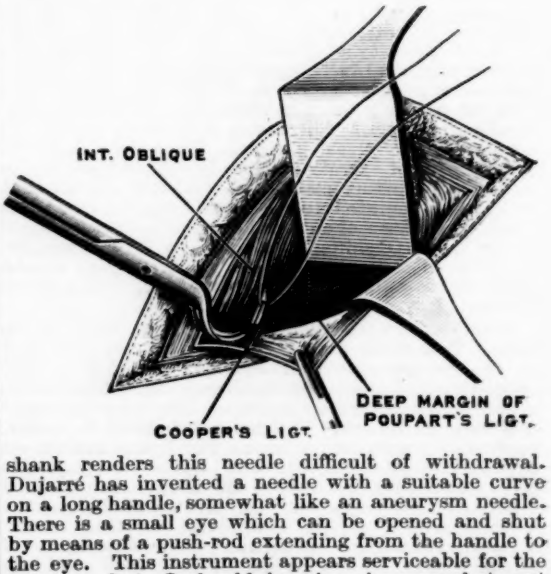
Water	84·9	per cent.
Alcohol	0·26	,,
Acidity (as lactic acid)	0·2	,,
Malt extractives	14·62	,,

Of the extractives 69·4 per cent. was reducing sugar (estimated as maltose) and 9·0 per cent. dextrin. The specific rotatory power was $[\alpha]_{D\,39} = +113{\cdot}7$. The mineral matter present amounted to 0·2 per cent. and consisted mostly of phosphates. The agreeable palate and flavour of the extract is enhanced by the "condition" resulting from the alcoholic fermentation, and in this respect it differs materially from other malt extracts on the market. An examination for preservatives afforded negative results. The manufacturers claim that the Crown malt extract is a nutritious and invigorating preparation, restores loss of appetite, and is a valuable tonic.

New Inventions.

IMPROVED INSTRUMENT FOR THE RADICAL CURE OF FEMORAL HERNIA: INGUINAL METHOD.

THE great difficulty in the inguinal method for the radical cure of femoral hernia is to obtain a suitable instrument for the suture of Cooper's ligament to the deep border of Poupart's ligament and the lower border of the internal oblique. Cooper's ligament is situated so deeply that it is a matter of some difficulty to place a needle containing the suture through it without either (1) the point of the needle sticking into the bone, or (2) the point of the needle turning over after it has emerged from the ligament. When the latter occurs, especially when the outermost stitch is inserted, the occasion gives rise to some anxiety owing to the proximity of the external iliac vein. Symond's needles have been largely used on account of the completeness of the curve, but the long



shank renders this needle difficult of withdrawal. Dujarré has invented a needle with a suitable curve on a long handle, somewhat like an aneurysm needle. There is a small eye which can be opened and shut by means of a push-rod extending from the handle to the eye. This instrument appears serviceable for the purpose, but. I should imagine, is somewhat apt to get out of order. It has occurred to me that a Cleveland's ligature holder would serve the purpose, but I found that it had certain drawbacks: (1) the point was too blunt, and (2) the curve was not great enough. I have had made a Cleveland's ligature holder with a needle point and with a curve of a halfpenny. With this instrument, as the illustration serves to indicate, the placing of sutures in all three structures is a matter of simplicity. The instrument is passed, first through Cooper's ligament, through the side nearest the bone, until it emerges through the ligament into the pelvis. The holder is then withdrawn, and the lower end of the kangaroo tendon is thrust through the deep border of Poupart's ligament. When all the sutures have been thus placed, the upper end of each suture is seized and made to penetrate the lower border of the internal oblique. By this means the manœuvre, instead of being a difficult and somewhat formidable one owing to the great depth of Cooper's ligament, is rendered easy, and takes little time to perform.

Messrs. Allen and Hanburys, of Wigmore-street, London, W., are the makers of the instrument.

A. E. MORTIMER WOOLF, M.B., B.C. Camb., F.R.C.S. Eng.
Wimpole-street, W.

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Insurance Practitioners and the Approved Societies.

WE have made reference already in these columns to the real danger of giving the approved societies the measure of control over the medical service under the Insurance Act, as it lies in the Bill which has been recently introduced by the Minister of Health. This Bill enables the Government to transfer the burden of the additional half-crown in the present capitation fee from the Treasury funds to the surplus funds of the societies. This may be only a temporary measure, but it cannot be denied that the societies regard the change as a step towards financial control. It is clear that they intend to maintain the position that the new relationship will give them the power to lay down the conditions under which the doctors will work in the future. Their attitude is well expressed in a recent editorial article in the *National Insurance Gazette* in which the following passage occurs: "Surely it is better to bring the societies in than to leave them outside, simply saying we will pay 7*s.* (less two-ninths) and not a copper more. If the societies say that and the Government will not find any extra, *where are the doctors?*" Could anything be more explicit? We hope the significance of the threat will not escape the notice either of medical men or the public. Can it be for the good of the country that the doctors should be placed in such a humiliating position? Are insured persons satisfied that they can leave their interests in the hands of the societies? We think not, and many practitioners can testify from daily experience to the difficulties and delays which are placed in the way of securing sickness benefit for workers whose illnesses place them and their dependents in a condition below the poverty-line.

Nor can we believe that any Government, no matter what the political pressure, would allow the medical profession to be hampered in rendering the best service if it were demonstrated that any proposed legislation would have that effect. Now the officials of the approved societies are not scientific men and cannot be expected to understand the rationale of medical practice. Their ideas of medical service must necessarily be one-sided; they cannot know the best conditions under which practitioners may render service in accordance with the highest traditions of their profession. The main interest of the societies is financial; their main concern is the cutting down of the amount of sickness benefit in order that they may have satisfactory balance-sheets. The standard of service must be set by the profession and should be something higher than any commercial standard. We are told that "what the approved societies want is a fair opportunity to discuss things." By all means, no matter what is meant by "things." Full and open discussion will help each side to understand the point of view of the other. But when the approved societies claim to be a party to the doctors' agreement with the Government something very far from an opportunity for discussion is being sought, and the profession does not intend to bargain with representatives of the approved societies but only with the Government. Let the societies state their requirements and if these are for the welfare of insured persons well and good. As far as these conditions do not interfere with scientific treatment the profession will always be ready to coöperate. What if the demands are unscientific and unreasonable? Are the doctors to agree because the societies have the power to withhold some portion of the remuneration? This is the unreason of control.

The profession has been profoundly affected by the Insurance Act, and the present question is vital to its future welfare. The proposed step is not only dangerous but will alienate the best type of practitioner. It is retrograde because it will interfere with the proper development of the service. The sympathy of the whole profession must be enlisted if the service is to be what it ought to be in the real interests of the State. The present panel system, though immature, affords a sound foundation for a larger service, and the societies should devote their resources to development of specialist services, laboratory facilities, and hospital provision, which are so urgently required. The special conference of local and panel representatives, now being held at Westminster by the B.M.A., will place the position clearly before the profession.

Opium and the League of Nations.

LAST year[1] we traced the progress made towards putting into general operation the International Opium Convention which was originally signed by Great Britain and 11 other Powers in January, 1912. For the last two years the League of Nations has been entrusted with the effectuation of that Convention, so far as the States, now 50 in number, which are members of the League are concerned. As regards States which are not members of the League, the Netherlands Government continues to act in respect of them. This dual arrangement, although at present inevitable, does not make for rapid uniform international coöperation in legitimising the traffic in opium, morphia, cocaine, and other similar drugs. It thus comes about that while some Powers have passed the legislation required to carry out the Opium Convention, others have either not signed or not ratified the treaty or, although they have ratified, have not given to it legislative effect as Great Britain has done by passing the Dangerous Drugs Act of 1920.

An Advisory Committee, appointed by the Council of the League, to whose first report we referred last December, has just completed its second session at Geneva. Among the nine members a representative of Germany was present for the first time. Attention was called to the fact that among the Powers which have not yet ratified is Switzerland, whose central European position makes her coöperation in controlling the traffic very essential. Moreover, Persia's adhesion is a qualified one, and the fact that much opium is there produced demands that she, like Turkey, which has not yet ratified the Treaty of Sèvres, shall be brought into line. The limitation of the traffic in dangerous drugs to legitimate purposes, as contemplated by the Opium Convention, has led to an attempt to preclude their export to any country except under a Government certificate from the importing country, and the Advisory Committee suggests that simultaneous adoption of this practice shall obtain in Europe and America as from Sept. 1st next and elsewhere as from Jan. 1st, 1923. The attempt made by the Health Committee of the League to determine the amount of the dangerous drugs in question required for legitimate purposes in different countries and for the world at large has not as yet led to any very definite results. The word "legitimate" is itself indefinite and apparently in the minds of some should not be held to imply medical use alone, but should cover the non-medical eating of opium as in India, and even use for smoking, as in Burmah, Straits Settlements, the Dutch East Indies. It is satisfactory to learn that the excessive consign-

[1] THE LANCET, April 30th, Sept. 3rd, and Dec. 10th, 1921.

ments of British morphia to the Far East, and especially via Japan into China, have engaged the attention of the Advisory Committee, and its recommendations will be shortly before the Council of the League. The annual report, which each Power is asked to make, will, it is hoped, include the names and addresses of the firms which fabricate the dangerous drugs in question and the amount of the annual output of each factory. Such disclosure should lead to that international and national control of these drugs from their source to their distribution which should do much to prevent their diversion into illicit channels. It is also time to bring to an end the traffic in "prepared opium," used only for smoking purposes; the Indian Government condemns this as "essentially a social vice."

Finally, the Committee invites the pressure of public opinion to expedite the execution of the Opium Convention, and, from the almost daily exposures in the public press of the unlawful and vicious use of cocaine and morphia, there is abundant evidence of the need to apply the remedy which, in the shape of the Opium Convention, has been in existence, on paper, for more than ten years.

Annotations.

"Ne quid nimis."

CURRENT OPINIONS IN ENDOCRINOLOGY.

IT is frequently forgotten that our real knowledge of endocrinology is in an extremely rudimentary condition; there are few fundamental principles and the difficulty of examining hypotheses experimentally is great. In this respect the subject resembles psychology; like the latter, it is liable to be exploited and to abound in wild theories hard to gainsay. "The Lewis Carroll of to-day," said Harvey Cushing recently, "would have Alice nibble from a pituitary mushroom in her left hand and a lutein one in her right, and presto! she is any height desired." Such words of warning, however, have little effect—the tide of knowledge and the mud of nonsense are as yet inextricably mixed, and only time will bring about proper sedimentation.

The "Endocrinology Number" of the *New York Medical Journal*, published in April last, gives a symposium on the subject, and the assortment of papers, though of varying value, do give some idea of the present direction of thought on this subject. Dr. W. Langdon Brown (London) contributes a thoughtful article on the lines of the late W. H. Gaskell; his thesis is that the endocrine glands are modified nephridia, exceptions being the adrenal medulla, the islets of Langerhans, and the pineal. Primitive chemical mechanisms of excitation become specialised and housed in these disused structures and are brought under the control of the vegetative nervous system. Dr. G. W. Crile's paper suggests that hyperthyroidism can be controlled by digitalis and water, and it must be considered highly speculative. Dr. I. Geikie Cobb (London) gives a useful summary of the functions of the thyroid, and Dr. Sydney Pern (Melbourne) the latest views of goitre. The relation of the thyroid to infections seems now to be strongly insisted upon. Dr. Smith Ely Jelliffe (New York) unites endocrinology and psycho-analysis in the bonds of what appears to us an unholy matrimony. The thymus gland has its champion in Dr. Leonard Williams (London), who shows that it continues to grow up to or even beyond the age of puberty, is subject to cosmic influences, and is, in fact, a sort of male thyroid; moreover, status lymphaticus is closely associated with enlargement of the thymus. The Diagnostic and Therapeutic Rôle of the Endocrines in Functional Diseases is the subject chosen by Dr. A. S. Blumgarten (New York), who deals especially with the relation of the endocrines in gastric neuroses, neurasthenia, functional gynæcological conditions, and "pituitary headaches"; periodic headaches which are usually supraorbital or bi-temporal may be relieved by the administration of pituitary extract. Although the author describes these as "one of the most definite endocrine conditions," we cannot follow the line of argument which leads him to regard the pituitary as in any way connected with them. The parathyroid glands are rapidly assuming a position of first importance among the endocrines, and some really definite knowledge is to hand concerning their relation to tetanic and spasmophilic conditions. F. S. Hammett (Philadelphia) shows how they prevent the accumulation of the toxic nerve irritant methyl guanidine, which arises as a bye-product of muscular tone. A case of parathyroid insufficiency, successfully treated by dried ox parathyroid is reported by Dr. A. F. Hurst (London).

Prof. Louise McIlroy (London) considers the ovum (in the obstetric sense—i.e., the embryo with its appendages) as an internal secretory organ, but offers no convincing arguments in support of her theory. We might grant that the physiological balance between the endocrinous organs can be upset by the introduction of the ovum, but her authority for the statement that the ovum "pours unknown secretions into the blood stream," or that "if the secretion . . . . of the ovum is in excess, the symptoms of toxæmia arise," is not obvious. As she states, however, much patient clinical and laboratory research is needed into the physiological changes caused by the developing ovum; theories can at most provide working hypotheses for its direction. That blessed word "anaphylaxis" is brought forward by Dr. W. Neumann (Brooklyn) in connexion with a case of cholecystitis; his paper contains the comprehensive sentence "Endocrinology embraces the study of all phases of human life and is the science of all sciences." The article on Physiognomy and Endocrinology, by P. Fridenberg (New York) is most interesting, and well worth reading; the relation of certain types of facies to the endocrine organs is well known, and the author has spent his time well in describing some of the less obvious types. "Our Problems in Endocrinology," by Dr. J. Gutman (Brooklyn) is a well-balanced account of the main problems, the dangers of rash enthusiasm being pointed out. Dr. E. Appelbaum (New York) closes the number with a description of a rare type of pituitary disturbance, the main features of which are acromegaly, cyanosis, exophthalmos, dilatation of the pupils, menstrual trouble, cardiac dilatation, and myasthenia.

Such a symposium is useful. Its messages cannot be considered authoritative, but the grouping of considered views will assist progress.

SAFETY-LAMPS AND MINERS' NYSTAGMUS.

THE importance of the quality of glass used for miners' safety-lamps was discussed in the House of Commons last week on a motion for the second reading of the Coal Mines (Temporary Provisions as to Safety Lamps) Bill. Mr. Bridgeman, Secretary of Mines, explained that during the war, when supplies of glass for miners' lamps from Germany and Austria had ceased, Mr. McKenna urged certain British glass-makers to undertake the manufacture of the necessary quality of glass to satisfy the British demand, giving them a pledge to refuse during a period of three years from the termination of the war to approve any lamps containing glasses made in Germany or Austria. The manufacturers had carried out their part of the bargain, but it was doubtful whether the Board of Trade had power to carry out the Government pledge. The Bill was designed to put the matter beyond doubt. Mr. Adamson, a Labour Member for a Scottish mining constituency, voiced a general impression that miners' nystagmus had been on the increase, and inquired whether this increase could be traced to the use of British-made glasses. Another Member attributed the increased incidence of the disease to its earlier recognition by medical men. The Bill received further criticism and Mr. Bridgeman, though personally

satisfied that British lamps were efficient, professed himself willing to discuss the matter with representatives of the miners in the House. Eventually the debate was adjourned.

The recently issued report on miners' nystagmus[1] contains a criticism (p. 38) which probably refers to the transition period before the British manufacturers had undertaken to pay special attention to the matter: "During the war years the lamp-glasses supplied to the lamp-makers have been of an inferior quality and full of flaws which broke up the field into blotches of irregular light." As to the increased number of cases during 1919 and 1920, the Committee attributes this partly to an accumulation of long-standing cases and partly to a recertification or resumption of payment to men who had failed after return to work. The number of men who show nystagmus on examination certainly varies in different countries and also with the observer. For example, Sir Josiah Court, in a report to the Derbyshire Miners' Association in 1891 gives the percentage as 34·75 of all coal cutters examined, whereas Llewellyn in 1912[2] gives it as 22. The incidence of a disease of such complexity wherein there is so large an element of psychoneurosis, is always difficult to assess.

TREATMENT OF HÆMORRHAGE FOLLOWING TOOTH EXTRACTION.

IN the *Revue de Stomatologie* (January, 1922) Dr. Thésée gives an account of a boy, aged 10 years, who succumbed to hæmorrhage following the removal by the boy himself of a right lower second deciduous molar. The roots of the tooth were completely absorbed and the child pulled the tooth away with his fingers. The attention of the parents was drawn to the bleeding on the third day; pressure was applied to the bleeding area and injections of hæmostyl were given. The hæmorrhage continued, with remissions. The child was admitted to hospital and gelatin serum was injected, but his life could not be saved.

Hæmorrhage after the extraction of teeth may be serious, and since the patient may not take alarm until several hours have elapsed, it often becomes the duty of the nearest available doctor to treat the case. Plugging the socket, providing it be accurately applied, will generally suffice but may not be easy, and many styptics have been recommended as an adjuvant. Some of these, for example ferric chloride, give rise to subsequent sloughing, which more than outweighs their hæmostatic action and are therefore to be condemned; others, like adrenalin, are so quickly diluted by saliva or blood that they become ineffective. Mr. F. St. J. Steadman, in an interesting paper read before the Section of Odontology of the Royal Society of Medicine, and published in the *British Dental Journal* for April 1st, advocates the use of oil of turpentine and states that over an experience of 12 years he has not known it to fail. The method of application is simple. The gauze is soaked in the drug and the socket packed; if necessary it is kept in place by stitching or by applying a pad over the gum and bandaging the jaws. Mr. Steadman gives notes of four cases in which the hæmorrhage was severe. The patients were all women and in each there was a history of a liability to bleeding; the father of one patient had died from hæmorrhage. The teeth were removed at intervals with great care and all went well until a canine was extracted. This bled profusely for several hours. The socket was syringed with cold water and packed with gauze soaked in oil of turpentine, and the bleeding ceased immediately. Another patient, a woman of 30, gave a family history of a mother with a tendency to bleed, the patient's son died of hæmorrhage after circumcision at the age of 4, and her daughter also had hæmophiliac tendencies. Several teeth were extracted without any bleeding, but profuse hæmorrhage followed the removal of a molar. In this case it was necessary to pack the socket on three occasions before the bleeding was finally controlled. Mr. Steadman remarks that although they were not true hæmophiliacs, yet there was an abnormal tendency to bleed in each case, so that the test of the efficacy of turpentine as a local hæmostatic was severe. In each of these cases calcium lactate had been given previously, but in the majority of Mr. Steadman's cases calcium lactate was not given as the bleeding was unexpected. Mr. Steadman adds that oil of turpentine is a powerful antiseptic, and that after the plug is removed the sockets retain a faint smell of turpentine and are clean and free from infection. This is in striking contrast to the usual experience after plugging, when the socket is generally septic and takes a long time to heal.

Oil of turpentine would appear to possess definite advantages over most other methods of dealing with hæmorrhage of dental origin, though in the *British Dental Journal* for March, 1920, a case was reported in which death resulted eight days after the removal of three teeth; turpentine was used locally as advised by Mr. Steadman, but even with transfusion of blood failed to save the patient. Mr. Steadman does not claim to have originated the use of oil of turpentine. It is, in fact, a very old method which has dropped out of recognition, although it still has an oral currency among older practitioners. S. J. Salter, in 1874, quotes John Hunter as advocating its use after dental hæmorrhage and there can be no doubt that it has proved a useful addition to the list of reliable local hæmostatics.

[1] See THE LANCET, April 29th, p. 854.
[2] The Colliery Guardian, 1912.

THE WAR OFFICE INQUIRY INTO SHELL-SHOCK.

THE War Office Committee of Inquiry into Shell-shock held its fortieth meeting on May 10th, Lord Southborough presiding. The Committee has finished taking evidence, having had the benefit of the advice of a large number of experts, both military and medical, and is now considering the report. It is expected that the report will deal in detail with the origin and nature of shell-shock, and will suggest measures which may be expected to mitigate the incidence of this group of nervous and mental disorders in future wars, and also measures for the treatment of patients suffering from such disabilities. Shell-shock, in this last connexion, need not be taken as implying only shock from subjection to the risk of explosive missiles, and the findings of the Committee are sure to have valuable messages to medical men in the conduct of civilian practice, especially where that practice is mainly in industrial circles.

BLOOD-PLATELETS IN RELATION TO A-VITAMIN DEFICIENCY.

IN our correspondence columns last week Dr. S. Monckton Copeman set out the ingredients of a diet free from A-vitamin, the possible influence of which on patients suffering from malignant disease is being investigated. It will be interesting to note whether the diminution of the number of blood-platelets observed by W. Cramer, A. H. Drew, and J. C. Mottram in the rat on a diet deficient in A-vitamin is noticeable in the human subject. In a paper communicated to the Royal Society on May 4th these investigators record that the absence of the fat-soluble vitamin from the diet always leads in the rat to a progressive diminution in the number of blood-platelets. This thrombopenia is the only constant lesion which has so far been found in every case of A-vitamin deficiency, and is regarded by the authors as the lesion characteristic of this deficiency, just as lymphopenia is characteristic of the B-vitamin deficiency.[1] Thrombopenia may even be found in rats kept on an A-vitamin free diet, when they do not yet show any obvious signs of ill-health and are to all external appearances normal animals. When profound thrombopenia has been established, addition of the

[1] THE LANCET, 1921, ii., 1202.

missing A-vitamin to the diet is followed by rapid increase in the number of platelets up to the normal, provided that the animal has not been allowed to suffer too long and too severely from deficiency. Exposure to radium produces not only lymphopenia, but also, with sufficiently large doses, thrombopenia. From this the animals recover rapidly, if the application of radium is discontinued and the dose has not been too large. If, by exposure to radium, or by withholding the fat-soluble vitamin, the number of platelets has been reduced below a certain critical level—about 300,000 for the rat—the resistance of the animal to infection is greatly diminished and infective conditions develop spontaneously. These may lead to a secondary anæmia. The infective conditions may clear up again as the number of platelets is made to increase. The authors claim that blood platelets fulfil an important function in the mechanism of resistance to bacterial infection, and that alterations in local or general resistance to infection are associated with local or general changes in distribution of the platelets.

DYNAMICS OF MYOGENESIS.

UNDER the title of "Studies in the Dynamics of Histogenesis,"[1] Eben J. Carey raises a very interesting question as to the tension of differential growth acting as a stimulus to myogenesis, and illustrates his views by observations on the experimental transformation of the smooth bladder muscle of the dog, histologically into cross-striated muscle and physiologically into an organ manifesting rhythmicality. In previous communications the author, basing his views on embryological observations, was led to the view that the undifferentiated mesochyme cells in consequence of the influence of varying optimum tension acting on them from without, can be transformed into different types of muscle cells. So far as histological structure is concerned, there are many modifications in the form of the typical fusiform smooth-muscle type of cell—for example, its tripartite form in the frog's bladder and the branched ends in some blood-vessels. The heart fibres in the frog retain the fusiform shape but are cross-striated; the heart fibres of a mammal retain many of the characters of a syncytium, the cross-striation being perhaps a morphological change facilitating rapid change of form resulting in a rapid mechanical response. The various types of muscle cells found in the body—smooth, cardiac, and skeletal—are believed to be resultants of different degrees of optimum tension, the essential difference physiologically being their capacity for work, which in turn is dependent on the amount of work that has been expended in their production. The author exemplifies his views by comparing the heart and the bladder. At the thirtieth hour of incubation in the chick embryo the primitive mesenchyme begins to pulsate rhythmically, at first slowly, then more and more rapidly as growth continues and as the vascular channels become hollowed out and continuous. This is concomitant with a constantly greater increase in the volume of blood. The rate of the heart beat increases from 10 to 15 at the thirtieth hour to 150 to 190 per minute at the ninetieth hour. From the fortieth until the one hundred and twenty-fifth hour the heart is composed of cells not unlike smooth muscle, but at about the one hundred and twenty-fifth hour cross-striation appears. The author supports his thesis of the transformation of smooth muscle into the cross-striped form by experiment on the bladder of the dog, by converting it physiologically into an organ manifesting rhythmicality. A silver drainage-tube was introduced and fixed through a suprapubic opening into the bladder of a puppy bitch four weeks old. The fluid used was a saturated solution of boric acid at 37·5° C. At first the amount introduced was small—20 c.cm. daily—but was gradually increased until it reached 50 litres at the end of the experiment; the animal died on the fifty-eighth day. When the bladder had adapted itself to the successive introduction of increasing amounts of fluid, and when it was distended to its greatest capacity, it began to beat rhythmically after the manner of a heart beat, the beat varying from 10 to 300 per minute according to the degree of distension of the organ. With every contraction of the bladder fluid was expelled through the urethra. The expulsion was due to vesicular contraction and not to a passive transmission through the bladder—i.e., the contractions of the bladder musculature are active and independent of the heart and respiratory movements, not being caused by any indirect influence from the respiratory or cardiac regions. It was possible by an arrangement described in the text so to vary the intravesical pressure as to imitate at will many of the common phenomena manifested by the heart—e.g., bradycardia, tachycardia, extrasystoles, &c.

The changes in the bladder musculature were very remarkable. At the beginning of the experiment the thickness of the bladder wall when fully distended was 0·5 mm., and the weight of the bladder of a similar dog four weeks old weighed 0·75 g. In the animal experimented on the bladder weighed 4·75 g., while that of a control animal weighed only 1·59 g. The musculature presented a deep red tint resembling somewhat cardiac muscle, and the wall was 5 mm. thick and the organ was very vascular. Histologically, the network of broad fibres with centrally-placed nuclei showed the isotropic and anisotropic cross-lines, sometimes solid, sometimes composed of granules; no intercallated discs, however, were seen. The transitional epithelium of the bladder had undergone hyperplasia. The author concludes that the differential degree of energy possessed by the types of muscle is purely an embryological problem, and that the essential difference between the pale smooth muscle of the bladder and the red involuntary striated muscle of the heart is dependent upon the differential intensity of hydro-dynamic tensional stimuli to which the vesical and cardiac mesenchymal syncytia respectively, have been subjected during development. As the result of his studies the author claims that he has proved that the pale bladder musculature may be transformed into the red, cross-striated type by increasing the tensional stimulus to a degree comparable with that which the cardiac mesenchyme experiences normally. Function in this case, he claims, determines structure.

[1] American Journal of Anatomy, vol. xxix., 1921.

THE ULTIMATE PROGNOSIS IN EPIDEMIC ENCEPHALITIS.

THE growing conviction that epidemic encephalitis inflicts permanent injury in a large proportion of the cases which survive the acute stage of the disease finds confirmation in a recent paper by Prof. R. Bing and Prof. R. Staehelin in *Schweizerische medizinische Wochenschrift* for Feb. 9th. They have investigated the after-histories of their 97 patients who had survived the onset of the disease by at least nine months. Only 39 were cured, and if the cases of epidemic hiccough and other rudimentary forms be excluded, then there were only 24 recoveries out of 80 cases. The sequel which is most to be dreaded is a form of paralysis agitans of which the authors distinguish two types, early and late Parkinsonism. Their material included 36 cases of Parkinsonism, 11 of which belonged to the late type, the prognosis of which seems to be invariably bad. This late Parkinsonism may appear more than a year after the onset of the encephalitis, and once it has developed it invariably runs a progressive course. The authors were at first inclined to regard with comparative optimism the Parkinsonism which developed in direct continuity with the symptoms of epidemic encephalitis, and in a table showing the fate of 25 such cases, one is indicated as being cured, and seven are placed under the heading "Improving." But in a footnote the authors state that this single case of recovery had proved deceptive, a severe relapse having occurred. They are, therefore,

sceptical as to the possibility of recovery from post-encephalitic Parkinsonism. An instructive feature of their investigations is the marked differences they have found in the prognosis, according to the differences in the type of the original disease. All the seven cases of epidemic hiccough terminated in complete recovery, and this was also almost invariably the case when the primary disease was of a rudimentary type. The prognosis for the purely choreiform type was also comparatively good, all the seven patients in this class having recovered or being on the way to recovery. In none was Parkinsonism observed. Of 42 cases in which the dominant clinical characteristic was lethargy, only 11 terminated in complete recovery. The outlook was little better for the combined lethargic-choreiform type, and only two out of five cases of the purely myoclonic type escaped Parkinsonism. Of 13 cases of a combined lethargic-myoclonic type, only 5 escaped Parkinsonism. The other sequels to epidemic encephalitis are, as a rule, much less serious than Parkinsonism, but they are extraordinarily varied, and they include depression, severe psychoses, dementia and other psychic abnormalities, lassitude, extreme weakness, hyperidrosis, insomnia, pains and paræsthesiæ, paralyses of accommodation, recurrent swellings of the joints, and numerous other complications. It will thus be seen that even if the patient survives the acute stage of epidemic encephalitis—and the immediate mortality is about one-fifth of all the typical cases—the chances of complete and permanent recovery are far from good, and almost every other case belonging to the lethargic type, with or without myoclonic and choreiform symptoms, develops Parkinsonism sooner or later.

THE FOOD REQUIREMENTS OF CHILDREN.

IT is well known that the food requirements of children, and especially of children who are in abnormal health or under abnormal conditions, vary very widely. The food requirements of children are built up of four items, each of which is subject to individual variation, and each of which must be separately allowed for if a correct estimate of the total needs is to be reached. These items include the food required for (1) basal metabolic needs, (2) growth, (3) the demands of bodily activity, (4) the loss by excreta. In the second of these, that for growth, the child differs fundamentally from the adult. Wide as are the differences between individual children, they are not so wide as the differences calculated for the needs of children by different authors; this is perhaps owing to improper allowance for some of the components. Drs. L. Emmett Holt and Helen L. Fales[1] have attempted to study the subject more closely, and have already reached interesting conclusions, by an examination of the results of previous observers, to which they have added a good deal of their own. Basal requirements, relatively low at birth, rise quickly until a maximum is reached for the basal expenditure in calories per unit of weight or surface, at about the ninth month. From the first to about the eleventh year the basal metabolism of boys is greater than that of girls, then for a while the girls outstrip boys in their demands, but very soon an enduring equality of the sexes is declared. The growth requirements naturally vary according to the actual rate of growth, being therefore greatest per unit of body-weight during the first year and in adolescence. From the fourth to the tenth years the demands of growth are almost uniform, though, of course, children who are under the normal weight require more, as those over it require less, per unit of body, than the average.

The requirements of different children for activity differ very widely, more widely than those under any other factor; allowance must be made for all activity, productive or otherwise. Even the energy expended in digesting the food must be allowed for, since it is not taken into account in the basal metabolism. This factor alone may amount to 6 per cent. Another overhead charge on the body is that under the fourth heading of loss by excreta; for all ages after infancy it should not exceed about 10 per cent. The average total calorie requirements appears to be about 100 calories per kilogramme at 1 year (weight about 9·5 kg.); for boys at 6 years it is about 80 calories (weight 20 kg.), and thereafter remains fairly constant up to the age of about 15, because the increasing requirement for activity is met by a reduction in the basal needs. After a weight of 50 kg. has been reached the daily requirement can be rapidly reduced to the adult standard of about 48 calories per kg. In girls, the requirement at 6 years is only 76 calories (20 kg.), and remains at this level until the tenth year, when it rises because of the increased needs for growth and activity, with constant basal requirement. The requirement remains at 80 calories until growth is finished, and then falls rapidly to the adult level of 44 calories per kg. According to this allowance the total daily requirement of children of both sexes during adolescence exceeds by nearly 1000 calories, or nearly one half, that of an adult of moderate activity. The extra allowance during adolescence seems to be absolutely essential for the increased needs for growth and activity. It certainly seems the right thing to give a liberal diet not only during the period of adolescence, but to all children, since evidence on under-nutrition indicates that many children receive too little rather than too much food.

[1] The Food Requirements of Children. I. Total Caloric Requirements. By L. Emmett Holt and Helen L. Fales (Amer. Jour. Dis. Children, 1921, xxi., pp. 1–28) (Rockefeller Studies, xxxix., pp. 493–525).

PNEUMORADIOGRAPHY OF THE KIDNEY REGION.

Dr. P. Rosenstein[1] reports on his further experiences with the X ray examination of the kidneys and suprarenals by means of perirenal injection of gas, or, as he calls it, the negative contrast method. Hollow organs can be examined rontgenologically by filling them with a substance which produces a deeper shadow than the surrounding tissues, but in order to make the solid organs visible, the surrounding tissue must be made more permeable to the X rays, so that the organs under observation may by contrast produce a deeper shadow. This result can be brought about in the case of the kidneys by the injection of air or oxygen into the perirenal fat capsule, and so long as the needle for the injection is inserted in the proper spot, in the right direction, and to the right depth, Rosenstein claims that there is no danger of injury to the large blood-vessels or to the pelvis of the kidney. The correct site for the injection is given in his first publication on the subject.[2] To show that, provided oxygen is used, there is no danger from air embolus, he quotes experiments made in 1902 and 1904 by Gärtner and Sturz, showing that many litres of oxygen may be injected into the vein of a man or an animal without producing ill-effects other than slight transitory giddiness. The oxygen combines with the red blood corpuscles almost at once and is rendered harmless. The apparatus is exactly similar to that used for pneumothorax or pneumoperitoneum. Pain is an indication that the needle is either in the kidney or in the psoas muscle. It should be withdrawn until it moves painlessly with the respirations. The method is said to be of value in diagnosing (*a*) the presence of a kidney; (*b*) any alteration in its size, mobility, or position; (*c*) the presence of a tumour or hydronephrosis (although Rosenstein does not advocate the method where a hydronephrosis can otherwise be diagnosed); (*d*) the condition of neighbouring organs. The liver, spleen, and suprarenals can be well demonstrated by this method, and any abnormality detected. The method should not be used in cases of perinephritis or where an infection of the neighbouring parts is suspected. As opposed to the pain and discomfort caused by a pneumoperitoneum, Rosenstein

[1] Medizinische Klinik, 1922, No. 17.
[2] Zeitschrift für Urologie, 1921, No. 11, p. 447.

claims that perirenal injection is practically painless, and does not in any way interfere with the normal activities of the patient, who can walk about immediately after the injection. It may be performed bilaterally at the same sitting, in the out-patient department, or in the consulting room without causing anxiety.

A preliminary report on another method of radiological examination of the renal pelvis has lately been published by Dr. Samuel A. Thompson,[3] who refers to the technique used by Dr. L. G. Cole in 1910. Dr. Cole described a method of inflating the kidneys with warm filtered air, enumerating some of the advantages of this procedure over pyelography with opaque media, but the method appears to have gained no further adherents. While the injection of an opaque solution into the ureter or pelvis causes a shadow which may be of sufficient density to obscure the shadow of a stone, and, in any case, throws into relief only the pelvis and calices and not the kidney tissue itself, the injection of oxygen—the medium selected by Dr. Thompson for his cases—causes no shadow, and, moreover, is found to show up the parenchyma of the kidney as well as pelvis and calices. Dr. Thompson claims that the size, shape, and position of any stone that may be present can be determined with comparative ease. Among the conditions for which pneumopyelography is suggested as a useful help to diagnosis are hydronephrosis and pyonephrosis, in which the negative contrast method described above is not recommended without reserve. According to Dr. Thompson, pneumopyelography is a simple and painless procedure.

TRAUMATIC FAT-NECROSIS OF FEMALE BREAST.

IN May, 1920, Dr. Burton J. Lee and Dr. Frank E. Adair,[4] of New York, reported to the American Surgical Association two examples of traumatic fat-necrosis of the female breast, pointing out the striking resemblances of this condition to carcinoma. Since then they have met with three additional cases, though they have been unable to find any reference in the literature to this clinical entity. During the period in which the patients presented themselves at the breast clinic the writers met with 120 cases of primary operable and 163 of primary inoperable carcinoma of the breast. Traumatic fat-necrosis has therefore occurred in comparison with primary breast carcinoma in the proportion of 5 to 283, or 1·8 per cent. Among benign breast tumours the proportion of fat-necrosis to other benign tumours was 5 to 72, or approximately 7 per cent. Corpulency appeared to be an important factor, as there was not one single thin individual in the series, and every patient had more than the average amount of subcutaneous tissue. All were heavy women, weighing from 152 to 211 pounds. In every instance the breasts were large and full, the mammary glands in one case reaching to the level of the umbilicus. One of the chief diagnostic points is a definite history of trauma, which in two cases was followed by ecchymosis. A characteristic symptom is the extreme hardness of the tumour. Retraction of the nipple occurred in only one instance. Fixation of the skin strongly suggesting a diagnosis of carcinoma was found in all but one case. Attachment to the deeper structures was observed in two instances and lacking in three, so that it could not be regarded as a constant symptom. With one exception, in which the glands were exceedingly soft, no axillary or supraclavicular glands could be felt. The absence of any glandular involvement is therefore a differential point between fat-necrosis and carcinoma. The writers conclude that traumatic fat-necrosis of the female breast is a not infrequent condition which must be carefully differentiated from carcinoma, and suggest that some cases which may have been diagnosed by their gross appearances as carcinoma were not really cancerous at all, but were examples of traumatic fat-necrosis.

[3] Journal of Urology, April, 1922.
[4] Surgery, Gynecology and Obstetrics, April, 1922.

DYSENTERY IN THE BRITISH WEST INDIES.

IN the course of a paper recently read before the Section of Tropical Diseases at the Royal Society of Medicine, Dr. John Anderson showed that true dysentery accounted for about 5 per cent., whilst other intestinal diseases, including enteric fever, diarrhœa, and enteritis, were responsible for over 20 per cent., of the total deaths in the West Indies. For want of sufficient laboratory facilities the differential diagnosis of intestinal disorders is necessarily open to much inaccuracy, being based chiefly on clinical grounds or the degree of response to emetine treatment. Amœbic dysentery is apparently more prevalent than the bacillary form, and, owing to inexact methods of diagnosis and unsatisfactory treatment, is attended by a high death-rate. The usual method of treatment consists of preliminary emetine injections, when a case failing to respond is presumed to be one of bacillary dysentery and given sodium sulphate. Use is also made of native remedies of local repute. Amœbic abscess of the liver and intestinal perforation from amœbic ulceration appear to be rare complications. The free pollution by coolies of the banks of streams, which may serve as water supplies, is a fertile source of infection of all forms of intestinal disorder, and the inadequate methods of sewage disposal are a serious menace to the health of the population. Drastic measures of sanitary reform would indeed seem to be as necessary in the West Indies as in Mauritius. Dr. Anderson emphasised the need for encouragement and intelligent support by the Imperial Government, the importance of closer association between the insular medical services and the schools of tropical medicine in England, and for an extension of facilities to educate the rising colonial generation in preventive medicine.

THE SEARCH FOR SPECIFIC REMEDIES.

THE search for specific remedies, according to Dr. H. H. Dale, is really a legacy from the days when our ideas on the relation of medicine to disease were primitive. Several cases of recovery after the exhibition of a drug were at one time regarded as sufficient evidence that the drug alone had wrought the miracle. Our faith in pharmacy has now been weakened by more precise experimental conditions and by the knowledge that the processes of disease and recovery are immensely complex. The modern problem in infective diseases is to find a drug which will do the maximum damage to the invading organism with the minimal damage to the host. But a superior attitude even towards those who have faith in the contents of almost any bottle is dangerous. Dr. Dale illustrated this point at the Royal Institution last Friday by detailing his own disappointing experiences with the alkaloids of ipecacuanha, one of the few of the old specific remedies which have survived modern experimental tests. These alkaloids have recently been separated in the hope of finding one more toxic to protozoa than emetine while less toxic to the host. Success seemed to be imminent, for one of the isolated alkaloids destroyed protozoa in vitro with much greater speed and sureness than any other, and at the same time the toxic symptoms caused by its administration to the animal host were minimal. But, unfortunately, although almost ideal conditions appear to have been reached, this drug completely failed to cure the disease. Such disappointments are encountered almost daily by those engaged in medical research, so complex are the still unknown factors governing resistance. One important point emerges—we may regard it as almost certain that, stimulating as were the side-chain theories of Ehrlich, the chemical view of these processes must give way to the physiological one. Incidentally, as an illustration of the

unexpected ends sometimes attained, Dr. Dale instanced the attempt on somewhat slender theoretical grounds to enlist dyestuffs as remedies, leading to such different results as acriflavine as a disinfectant, and Bayer 205 as a specific for sleeping sickness. This latter, though not a dyestuff, is probably allied in formula to trypan blue, and there appears to be much evidence of its value. A very advanced case was recently sent from Liverpool to Hamburg for treatment and returned apparently cured. Some risk of damage to the kidneys appears to be entailed, but few patients would hesitate in the choice between living with a damaged kidney and dying of trypanosomiasis. In any case the results of the German investigations in Rhodesia will be awaited with keen interest. The educational value to the public of such an excellent interpretation of the ideals of scientific medicine as that given by Dr. Dale cannot be too highly assessed. Few people could contrive to enthral a lay audience and at the same time to send away the medical men present stimulated by a wealth of suggestive argument.

ADVANCED lectures in medicine, under the auspices of the University of London, will be given at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W. 1, at 5 P.M., on May 22nd, 25th, and 31st, by the following professors in the Faculty of Medicine of the University of Paris, who will speak in French. On May 22nd, Prof. F. Widal will discuss Anti-anaphylaxie. Prof. H. Vaquez's lecture on May 25th is entitled De l'Érythrémie (Maladie de Vaquez-Osler), and Prof. J. Babinski on May 31st will speak on Des Réflexes de Défense. The chair at these three lectures will be taken by Lord Dawson, Sir Wilmot Herringham, and Sir J. Purves Stewart respectively.

Dr. John Macpherson, C.B., who has lately retired from the post of Commissioner of the Board of Control for Scotland, has accepted for a period of three years the post of Professor of Psychiatry in the University of Sydney. This chair is the first of its kind in any University in Australia; the authorities have appointed to this post an experienced physician in Dr. Macpherson, a well-known administrator, who for some years has lectured on the subject of mental diseases at the Royal Colleges' School of Medicine in Edinburgh. There is already a clinic on mental diseases in connexion with the hospital at Sydney.

DENTAL BOARD OF THE UNITED KINGDOM.—At the close of the hearing of the disciplinary cases on May 11th the chairman of the Board, the Rt. Hon. F. Dyke Acland, M.P., announced the Board's findings in respect of 17 of these cases. During the session three other cases were also considered and dismissed, the facts alleged against the dental practitioners concerned not having been proved to the satisfaction of the Board. With regard to the 17 cases where the regulations of the General Medical Council concerning covering had clearly been infringed, the chairman made a general announcement to the following effect: Since 1897 warning notices with reference to covering had several times been issued by the Council, and the regulations had been made quite clear. Although the conduct of the practitioners who had been summoned before the Board this session had varied very much in gravity, that conduct might in each case be described as (1) fraudulent and dangerous to the public health, and (2) grossly unfair to brother practitioners. In addition, some of the accused had jeopardised the chances of their assistants who applied for registration, in an endeavour to save themselves. Taking all the cases into account, and having especial regard to the fact that the practitioners concerned had incriminated themselves (i.e., in writing to support the applications of their assistants for registration), the Board was prepared to give them another chance. The Board therefore postponed judgment until the November session, 1922, at which time the accused would be required to bring evidence of satisfactory behaviour in the interval. In future, when the facts of employment of unqualified assistants for other than mechanical work were proved, it must not be assumed that a similar course would be followed by the Board. The Board then adjourned, the chairman having announced that the session of Friday, May 12th, would be held in camerâ.

THE PHYSIOLOGY AND PATHOLOGY OF RESPIRATION.

Profs. Leon Asher and R. Staehelin have respectively dealt with the physiology and pathology of the respiration in the Swiss *Medizinische Wochenschrift* (Jan. 5th and 12th, 1922), summarising recent research work on this subject and giving a bibliography. Prof. Asher first draws attention, in connexion with internal respiration, to Neuberg's discovery of carboxylases—enzymes which, by splitting the carboxyl group, e.g., of amino-acids, set free carbon dioxide, amines thus arising. There are other possible reactions by which carbon dioxide can arise in the absence of oxygen—it can be expelled by acid from preformed carbonates, the end-stage of tissue respiration, in the absence of oxygen, being organic acid. A. V. Hill finds that muscular contraction is an anoxybiotic process, lactic acid being formed which occasions the change of tension of the muscular fibres. Oxygen is used chiefly in the restitution process after contraction. The oxygen part of the respiratory process in the tissues is comparable with fermentation—e.g., in respect of the influence of a co-ferment and of narcotics. In sugar fermentation intermediary substances arise, such as oxybutyric acid and acetic aldehyde, so too in tissue respiration. Protein and fat on oxidation yield similarly intermediary substances. The process is an acid-producing one, not only carbon dioxide but sulphuric, phosphoric, and organic acid arising.

The Measurement of Respiratory Exchange.

The consumption of oxygen in the body is ruled by the needs of the cells; uninfluenced by an oversupply, they cannot be forced into quicker burning as a fire can. The needs of the cells for oxygen stimulates the formation of hæmoglobin in men exposed to the attenuated air of high altitudes and in cases of artificial pneumothorax. Aromatic nitro-compounds, harmless in themselves, become toxic because the tissues rob them of oxygen and reduce them to poisonous hydroxylamines. The tissue cells can use then easily dissociable bound oxygen other than that in oxy-hæmoglobin. There is no reserve of oxygen-supply in the body—a man can only hold his breath for a minute or two, living meanwhile on the oxygen in the lungs. Internal respiration is measured by the difference between the arterial and venous blood. Barcroft has perfected the Haldane ferricyanide method, so that with his differential apparatus the gaseous content of as little as 1/10th c.cm. of blood can be analysed. The respiratory exchange of the heart and glands has been determined and found to be considerable; the use of oxygen in actively secreting glands is greater than the production of carbon dioxide. By means of the respiratory quotient the proportion of protein, fat, and carbohydrate metabolised is measured and the energy output calculated. The thermodynamics of the heart has thus been studied.

The Gaseous Tension of the Blood.

Warburg has put forward the view that oxygen is used to maintain the concentration and potential differences in living cells, which depend on the granular structure of the bioplasm of the cells. When this is broken up oxygen respiration ceases. Great interest attaches to the gaseous tension of the blood. The dissociation tensions of oxygen and carbon dioxide are plotted as curves, the gas pressures being given as abscissæ, and the gas volumes obtained from the blood after exposure to each gas's pressure being given as ordinates. The oxygen tension of arterial blood is found to be lower than of the alveolar air, and of carbon dioxide of the venous blood higher than that of the alveolar air. There is no proof of a respiratory secretory process, suggested by Bohr and supported by Haldane. Hæmoglobin is

found to be almost saturated with oxygen at very low pressures, hence the power of man to go to high altitudes. Its saturation varies with the temperature, reaction, salts, and carbon-dioxide tension of the blood (Barcroft). Thus the carbon dioxide expelled by the tissues helps to set free oxygen from the hæmoglobin in the blood which they need. There are types of men the blood of whom with an equal tension of carbon dioxide combines with more, or less, oxygen. Those with blood having the greatest power of combining oxygen are fittest for high altitudes. Carbon dioxide is carried in the corpuscles and plasma in combination with sodium as carbonates, with hæmoglobin, and with proteins of plasma; its dissociation curve depends on several factors. The carbon-dioxide holding capacity of the blood is a measure of its alkalinity, it being one link in the chain which upholds the neutrality of the blood. If a stronger acid than carbon dioxide is formed in metabolism a part of the alkali is used to neutralise this, and carbon dioxide is set free, and breathed out, so that the proportionate relationship of carbon dioxide to sodium bicarbonate in the blood is kept constant; with the upholding of neutrality there is a lessening of alkali reserve, alkali being taken from the blood into the tissues and secreted by the kidneys. Blood saturated with a known tension of carbon dioxide—e.g., with that of the alveolar air of the observer—can now hold less carbon dioxide, and this is a measure of the lessened alkali reserve, or "acidosis." On injecting acid into the venous blood carbon dioxide is breathed out, and ammonia used to neutralise it, and thus the hydrogen-ion concentration of the blood kept constant. When the blood circulating in the tissues meets a high tension of carbon dioxide the hæmoglobin absorbs chlorine ions, thus leaving sodium ions free to carry the carbon dioxide as bicarbonate. The reverse effect takes place in the lungs.

The Composition of Alveolar Air and its Effects.

Haldane has given us the simple method of obtaining alveolar air by breathing out deeply through a long tube and taking a sample of the last outgoing air for analysis, and making appropriate corrections for barometer, temperature, and vapour pressure. He has also shown that the breathing is regulated by the carbon-dioxide tension of the alveolar air and the hydrogen-ion concentration of the blood. The urinary secretion also regulates the latter. Thus on changing from a flesh to a vegetable diet the content of carbon dioxide in the alveolar air and the ammonia in the urine are readjusted and again brought into relation. A carbohydrate-free diet occasions "acidosis," acetonuria, and a lessening of carbon-dioxide tension in the alveolar air, unaccompanied by any change in pulmonary ventilation, the hydrogen-ion concentration in the blood, the stimulation of the respiratory centre thereby remaining the same. The alveolar carbon-dioxide tension may be lessened by increased excitability of the respiratory centre produced by moderate doses of alcohol, exposure to the sun, &c. Want of oxygen at high altitudes, shock, ether narcosis excite hyperpnœa centrally, and lead to washing out of carbon dioxide and an alkalosis until the excess of alkaline carbonate is removed by the kidneys. To this state of akapnia Yandell Henderson ascribes shock, and finds the breathing of 6–7 per cent. carbon dioxide a restorative. Starling has found that the complete absence of carbon dioxide from the blood has a very bad effect on the heart beat.

Increased carbon-dioxide tension in the alveolar air is due to greater alkali content of the blood or lessened excitability of the respiratory centre. If the last the carbon-dioxide tension of the blood and the H-ion concentration of the blood are above normal. Morphia has this effect, and the worth of different preparations of morphia may be tested thereby. The dead space of the large respiratory passage in which no "gaseous" exchange takes place is reckoned to be 140 to 150 c.cm., and to be physiologically increased, e.g., during exercise, by at most no more than 100 c.cm. Increase of dead spaces is of great importance, and must be avoided to the utmost in the construction of war gas-masks, and in breathing apparatus for use in mines and chemical works, and by firemen.

Of considerable interest are the modern methods of arriving at the output of the heart per minute by determining the respiratory exchange of the body, and by using the lung itself as a closed space in which to determine in a short period the equilibrium of gases with the blood circulating through the lungs. The latter entails the emptying of the lungs of air and the filling of them with nitrogen by a few breaths followed by the collection and analysis of the alveolar air. Such methods show how far muscular work in man increases the output of the heart. Haldane and Douglas find the oxygen in the arterial blood is far more completely used, and thus work may be done to a certain extent without much increase of the cardiac output.

Pathological Results of Change in Proportion of Acid and Bases in the Blood.

The lessened production of acid is a rare pathological condition, but may occur when the metabolism is lowered by deficiency of the thyroid or by undernutrition; it is compensated for by a smaller pulmonary ventilation. In some cases of nephritis an alkali excess has been noted. There is increased carbon-dioxide production in overaction of the thyroid, and in fever, compensated for by deeper breathing. In diabetic acidosis the H-ion concentration of the blood increases before life ends in coma. The body resists acidity by increased formation of ammonia, and by breathing out carbon dioxide, so that the alveolar tension of this gas sinks. The measurement of this tension is then a measure of the acidosis. The dyspnœa due to renal disease is set up by the want of balance of acid and bases in the blood. Dosage with sodium bicarbonate in one case pushed the reaction over to the alkaline side. The intravenous injection of 30 per cent. dextrose solution also cut short such dyspnœa, probably by pulling tissue fluids into the blood. Staehelin distinguishes a hæmatogenous hyperpnœa due to acids in the blood other than carbon dioxide from a centragenous hyperpnœa produced by acids in the brain—e.g., arising from venous stagnation or oxygen-want; both causing a lowering of alveolar carbon-dioxide tension. One-tenth of the lung surface suffices for the resting man's respiratory exchange. Thus large parts of the lung can be put out of action by disease, with no other respiratory result than shortage of breath on taking exercise, when the respiratory exchange may increase five and even ten times. It is obviously disadvantageous for parts of the lung to be no longer ventilated and blood to circulate through these, for then non-arterialised blood enters the left heart. Usually the capillaries are obstructed together with the air-sacs in pathological conditions.

The Pathology of Respiration in Pneumonia and Uncompensated Heart Disease.

In artificial pneumothorax the pulmonary circulation is very greatly lessened by the collapse of the lung, and there is little change in the oxygen saturation of the blood. In pneumonia there may be lessened oxygen saturation and cyanosis, but this is due to intoxication and the superficial breathing arising therefrom. Meakin has found in some cases the breathing volume to be little more than that of the dead space. After the crisis the condition at once improves, while the consolidation of the lung is unchanged. Oxygen breathing does great good and should be used in all cases of pneumonia so soon as signs of cyanosis appear; it may raise the saturation from 80 to 95 or even to 99 per cent. In emphysema the saturation of the blood with oxygen is normal in the good parts and subnormal in the bad parts of the lungs. The emphysema case has a greater pulmonary ventilation in order to make up for the greater space

in the lungs. Uncompensated cases of heart disease have a centragenous hyperpnœa, because of the slower blood flow. The alveolar carbon dioxide is lowered in consequence, and shortage of breath arises easily on taking exercise—a most valuable test of the compensation. At least 3 to 4 litres of oxygen can diffuse through the lungs into the blood per minute, but the heart case cannot secure this if the circulation is too slow. Heart cases cannot stand breathing an excess of carbon dioxide. The normal man breaks down on holding the breath when the carbon dioxide rises to about 7 per cent., heart cases at a much lower level, another test of their condition. In a case of pernicious anæmia the blood has been found only one-third saturated with oxygen, but the increased rate of circulation compensated for this, so that the breathing was normal. Morphia lessens the excitability of the centre in normal people, so that up to 9 per cent. of carbon dioxide may be endured. It may be of service in pneumonia by deepening the respiration. Narcotics kill by paralysing the respiratory centre. Camphor, caffein, atropin, lobelin, and alcohol excite it. The condition of "irritable heart of soldier" is due to central changes. There is lessened vital capacity and carbon-dioxide tension in the alveolar air, hypersensitivity to carbon dioxide, and inability to hold the breath for long, and abnormal reaction to exercise.

Disorders of Rhythm.

Cheyne-Stokes respiration is due to venous stagnation, or intoxication of the respiratory centre, and its lessened excitability. Breathing of either oxygen or excess of carbon dioxide stops it (Pembrey). In regard to the reflex nervous regulation of breathing through the vagus it is found that irritation of the upper air-passages by phosgene and other irritative war-gases causes spasm and inhibition, of the lower air-passages polypnœa; compare the quick shallow breathing of pneumonia. Pain on respiration makes the breathing shallow. The theory that emphysema arises primarily from ossification of the rib cartilages is rejected. Bronchitis and stenosis of the air-passages, e.g., in spasmodic asthma, lead to over-expansion of the lungs and degeneration, coughing being a principal cause; compare the emphysema of glass-blowers and musicians, particularly the oboeist who blows through a small orifice. After inhalation of barium sulphate in dogs peristaltic contractions of bronchi can be observed by the X rays. Muscarin excites, atropin and adrenalin remove spasm of the bronchial muscles.

Excitations of the breathing centre play an important rôle in asthma bronchialis. Anything that excites and seems to impede the breathing can lead to stridor. Artificial imitation of asthmatic breathing can call forth an attack. Hence the benefit of disciplinary breathing. Some cases have cutaneous and olfactory hypersensitivity, others are hypersensitive to some protein inhaled—e.g., pollen, horse, dog, or cat dandruff, feather dust in pillows—or eaten. The Pirquet reaction is used to identify the injurious agent. Scratches are made up the arm and a different protein rubbed into each. An inflammatory reaction occurs round the offending one. Some evidence is given that the failure of the circulation in anaphylactic shock is due not to paralysis of the body capillary vessels (Dale and Laidlaw), but to spasm and obstruction of the pulmonary vessels.

L. H.

THE Médaille du Roi Albert has been conferred on Dr. H. J. Price, of Maldon, Essex, by the King of the Belgians for services rendered to Belgian soldiers during the war.

DONATIONS AND BEQUESTS.—The Chelsea Hospital for Women has received from its chairman, Sir Frederick Eley, a donation of £1000.—Mrs. Blakey, of Freckleton, has given £2000 to the Preston Royal Infirmary, in memory of her father, who was a Preston tradesman and who died last year after attaining his 100th birthday.—Sir William Treloar has received a contribution of £300 to name the "Mary Blanche Cot" in the Alton Cripples' Hospital.

MEDICINE AND THE LAW.

The Dental Board and Covering.

DURING the recent session of the Dental Board of the United Kingdom the main fact which emerged in connexion with the disciplinary cases considered was that numerous dental practitioners pay little or no attention to the regulations framed by the General Medical Council for the ordering of their professional conduct. In case after case the accused pleaded ignorance of the regulations—an ignorance exposed by the action of supporting the application of unregistered assistants with statements which incriminated the practitioner concerned by clearly indicating that covering had taken place. The degree of covering varied widely, between establishment of an unqualified assistant in a branch surgery with little or no supervision, and the employment of a mechanic on operative work, usually under the direction of the principal, but without supervision during occasional holidays taken by the latter.

The Board wished to keep separate, as far as possible, the questions of discipline and registration, but in some cases it became evident that the practitioner had overstated the case on behalf of his assistant, and in so doing had taken up a position from which he found it desirable to withdraw when the facts were made plain. In several instances, therefore, the assistant's application to be registered as a dentist was totally withdrawn, usually with the understanding that the assistant would enter another application to be placed on the list of mechanics desirous of passing the prescribed examination.

In no case before the Board was any complaint brought forward with proof of the dangers attending the irregularities which have taken place. It was argued on behalf of one of the accused that the employment and training of an unqualified operative assistant by a registered dentist—employment and training which might clearly be of a better type than those given by an unqualified dental practitioner—should not be regarded too severely at a time when unqualified men who had practised for the prescribed period of time had been admitted to the register irrespective of their early training. In another instance the accused advanced the defence that in the face of so much unqualified opposition he felt it his duty to train an assistant of whose competence he might be assured.

The Board directed no names to be removed from the register, but ruled that those persons against whom charges of covering were proved should, at the November session of the Board, bring evidence of unquestionable behaviour during the intervening period. That the leniency displayed on this occasion is not to be regarded as a precedent was clearly indicated by Mr. F. D. Acland, M.P., Chairman of the Board, in his pronouncement of the Board's ruling. For he emphasised the gravity of covering in its several aspects as a fraud upon the public, a danger to the public health, and a proceeding grossly unfair to practitioners who were abiding by the regulations of the General Medical Council.

Unqualified Dental Practice.

In the case of Kett *v.* Morton, recently tried before Mr. Justice Sankey, the dangers to patients availing themselves of the services of unqualified dentists were well exemplified. Mr. H. S. Kett sued Mr. C. Morton for damages for wrongful dismissal, for repayment of £50 paid by him to Morton in 1920 under an agreement for his instruction and employment, rescission of the agreement which was, inter alia, "to thoroughly teach him the profession of a dentist," both mechanical and operating, and for damages for the breach thereof. Mr. Justice Sankey found that the defendant never did and never could teach the plaintiff; the £50 must therefore be returned with £5 for loss of earnings; as to the other claims for damages, the plaintiff was lucky in being dismissed, and a farthing for dismissal and another farthing for the defendant's breach of

contract brought the total of damages up to £55 0s. 0½d. for which judgment was given with High Court costs. The kind of "dental practice" carried on by Mr. Morton, a retired furniture dealer, was revealed in his agreement to teach Kett his "profession," in the steps which he took to do so, and in his letters to Kett when he had set the latter up, after four or five weeks' instruction, in charge of a branch establishment. The "instruction" consisted apparently in watching Morton extract teeth and passing two or three weeks in his workshop. The letters referred chiefly to the pushing of the business; the following extracts illustrate the spirit in which Mr. Morton traded, and it is to Mr. Kett's credit that he did not give Mr. Morton satisfaction in the carrying out of his exhortations. Morton wrote: "Make capital of your knowledge and push, push, push for new cases and money." "It is just as easy to get half cash as instalments, but operate first, discount the danger to them." And again: "You seem to me too obsessed with the idea that you are a sort of patient's aid society. Yes, you are, but always remember turn their troubles to benefit *to us*. . . ." "You must discriminate and for Heaven's sake look after us, the patients can look after themselves. . . ." "Get all the money you can; that is what I run the businesses for."

Towards the end of their connexion Morton wrote to Kett: "With reference to covering you, I could give a certificate saying you were competent to practise dentistry, or, subject to your behaving properly, probably get you placed on the register as soon as the Act is passed." The attention of the Dental Board will no doubt have been called to the case.

EPIDEMIC CONDITIONS IN EASTERN EUROPE.

IT may be remembered that at the request of the Polish Government the Council of the League of Nations held a conference in Warsaw when a detailed plan was prepared for an anti-epidemic movement in the border states and in Russia, the conduct of which movement it was recommended should be entrusted to the Health Organisation of the League of Nations in association with the League of Epidemics Commission. The three last reports of the Provisional Health Organisation, which we have received from the London office of the League of Nations, and which are dated March 25th, April 4th, and April 13th respectively, contain general information on the epidemic situation in the famine zone of the Ukraine; an enumeration of the cases of cholera in the Ukraine and in Russia; and lastly the statistics of infectious diseases in Poland, Latvia, and Hungary.

In the Southern Ukraine, in the districts of Odessa and Nikolaiev, which are the most seriously affected, 25 per cent. of adult mortality and 40 per cent. to 50 per cent. of infant mortality are attributed directly or indirectly to famine. Many medical men report that the lessening physiological resistance in the population is due to famine and to the use of food substitutes. They give as examples of this the fact that intervals between the attacks of relapsing fever are often very short and mortality has increased, and the observation of surgeons that broken bones do not mend. The information concerning cholera received during the month of April shows a more serious spread of the disease than that indicated by the figures for March. From Jan. 1st to March 31st, 1165 cases were reported from the Ukraine. The epidemic originated in the migrations of refugees from famine zones, and it had been spread along the railway lines, as is shown by the numerous cases of cholera among railwaymen and in the towns situated on important railway lines. Strict sanitary control at railway junctions is urgently necessary. In Russia proper, the Commissariat of Public Health has reported 299 cases of cholera between Jan. 1st and Feb. 18th, occurring in widely different localities. The reappearance of this disease over a wide extent of country and from the very beginning of the year, is the most disquieting characteristic of the present epidemic reports.

The epidemic condition of the countries bordering on Russia remains serious. The report says: From Feb. 4th to 19th, according to provisional information, there have been in Poland 5140 cases of relapsing fever with 208 deaths; other figures are as follows: typhus 3730 and 275 deaths; enteric fever 1036 and 68 deaths; dysentery 136 and 10 deaths; small-pox 106 and 24 deaths. The progress of relapsing fever in Poland has been as follows: In 1919, 2376 cases and 153 deaths; in 1920, 7079 and 293; in 1921, 14,163 and 414; finally, for the first seven weeks of 1922, 13,415 cases and 582 deaths. The most affected districts are: Polesia, Bialistock, Lublin, Volhynia, and Novogrodek.

From Latvia and from Hungary, the population of which is given as 7,840,000 by a recent census, come similar stories of blighting epidemics. The seriousness is considerably increased in the Southern Ukraine by shortage of water—in Odessa the waterworks are no longer in use, the reservoirs which are situated in the middle of the famine zone have been abandoned by the workers, and the population have been dependent upon casual supply from rain or snow, sources which have ceased with the approach of summer.

Such is the terrible story narrated by the last periodical reports of the health section of the League of Nations.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Failure of Compulsory Medical Examination of Female Domestic Servants.

THE Kolozsvár Board of Sanitation (Transylvanian Branch of the Bucharest Ministry of Public Health) issued an order, applicable in the towns, providing for the medical examination of all female domestic servants before entering and on leaving service. This order was issued because of the great number of servant-girls found with venereal disease on the streets after working hours. In the larger towns the police make periodic drives and take into custody all females, found in the streets after 11 P.M. who are unable to give a satisfactory explanation of their presence there. They are medically examined at the police-station, and if necessary are sent to hospital. The majority of unemployed servant-girls have been found to be infected with venereal disease. The order, issued to counteract these conditions, has roused much opposition. Better-class girls—nurses and governesses—strongly objected to this police medical examination. Servants' registry offices were avoided, and girls went to the villages and smaller towns rather than undergo what was described as "vivisection." The result of the draconic order was that no domestic servants were to be had in towns. The spread of venereal disease, instead of being checked, was promoted by the order; those suffering from venereal disease left their places before the execution of the order for fear of being sent to hospital, and, lacking other means of livelihood, turned to secret prostitution. The councils of the larger towns have unanimously agreed to send a memorandum to the Board of Sanitation requesting them to withdraw the order.

Suppression of a "Specific Remedy" for Tuberculosis.

Dr. Putzureanu, a medical practitioner at Giurgin, recently produced a new drug which—according to his experience of its use in more than a hundred cases—constituted a cure for tuberculosis even in a very advanced stage. The drug consists of two extracts made from herbs hitherto unknown to possess pharmaceutical properties. Dr. Putzureanu did not describe his drug in the medical press, but placed advertising articles in the large daily papers. He was flooded with patients from all parts of the country, in such large numbers that special trains had to be run from Bucharest to

accommodate them. The Bucharest Board of Sanitation finally took action on the receipt of complaints from patients that they paid exorbitant fees with no result. Dr. Putzureanu was informed that he must discontinue the use of his drug until the Experimental Research Commission of the University of Bucharest had decided on its usefulness. The Commission has now reported that Dr. Putzureanu's drug is a wholly valueless extract of herbs, containing belladonna. His "cure" lasted eight weeks, and consisted of daily injections; he thus prevented patients from having other more efficacious treatment, and thereby endangered them. On the grounds established by this report the Ministry of Public Health has confiscated all Dr. Putzureanu's stock, forbidding him under penalties to continue the administration of his drug.

April 29th.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Medical Victims of the Bomb Outrage of April 3rd.

A BOMB outrage was perpetrated in Budapest on April 3rd at a banquet held at the Democratic Club and attended by more than a thousand persons, including about 150 medical men. Among the six dead was one medical man, Dr. Paul Denes, and of the 40 wounded three were doctors. One of the latter, Dr. M. W. Maros, died on April 28th, after four weeks of great pain. All the wounded are very seriously injured, the bombs having been filled with nails and other fragments of iron; some have had to be operated upon five or six times. The whole detective force of Budapest has been mobilised to discover those responsible for the outrage, but hitherto no definite results have been reported. Hypnosis has been employed in this connexion; Dr. Francis Völgyesi, chief police medical officer, a well-known psychiatrist, tried for some time to find a suitable medium among those suspected of participation in the outrage, but nothing could be proved against them. Finally, Dr. Völgyesi found a young man who, when hypnotised, gave two names "John" and "Francis," as those of men who walked about the club-house on the afternoon of the banquet. He said that one of them went home late at night and quarrelled with the house-porter over a tip. After close inquiry detectives were able, by means of this information, to identify both men, and there is evidence of their connexion with the crime.

Death of Prof. Holzwarth.

Dr. Jenö Holzwarth, Professor of Radiology at the University of Budapest, and Ministerial Adviser, died on April 25th in consequence of carcinomatous degeneration of X ray burns. Prof. Holzwarth was the first Hungarian surgical radiologist. Immediately after the discovery of the application of X rays in medical science, he studied radiology under Professor Röntgen at Würzburg; later he went to England, supplemented his knowledge of X rays, purchased the best apparatus then obtainable in London, and began extensive X ray work. He abandoned medical practice, and devoted his whole energy to Prof. Dollinger's surgical clinic. There he carried on screening, photographic work, and treatment, ignoring the dangers of his occupation. The burns were first noticed on Prof. Holzwarth's fingers some ten years ago; he did not abandon his labours, but began to use protective appliances; the vast amount of work he performed, however, rendered protection useless. Throughout the war he worked in a travelling X ray car designed by himself. In 1918 two of his fingers had to be amputated, and in 1920 signs of internal carcinomatous growth supervened. He suffered very severely before his death. Prof. Holzwarth was responsible for several inventions in connexion with radiology, and wrote many valuable dissertations on X ray therapeutics.

April 29th.

FOOT AND MOUTH DISEASE.

A CIRCULAR letter has been addressed to local sanitary authorities by the Ministry of Health drawing attention to a recent amendment of the Foot and Mouth Disease Order of the Ministry of Agriculture. The circular calls attention to a modification in the hitherto invariable practice of dealing with local outbreaks by slaughtering all animals found to be suffering from the disease or to have been in contact with diseased animals. In future each case will be considered on its merits, and where local circumstances are specially favourable for ensuring isolation, or when pedigree herds of great value are concerned, the policy of keeping affected animals and contacts in strict isolation until their recovery may be considered. Where this new procedure is adopted the responsibility of ensuring that the milk from the diseased animals is not sold for human consumption will fall upon the Sanitary Authority (under the Dairies, Cowsheds, and Milkshops Order of 1885). The amended order provides for notification of all outbreaks of foot and mouth disease amongst animals in his district to the medical officer of health. Arrangements have also been made for informing him of those cases in which it is proposed to deal with the diseased animals and contacts by isolation. It will therefore be a practical point for him to determine at what stage of convalescence the milk can be regarded as innocuous.

As regards the danger of infection to man, many cases have been reported where illness has occurred as the result of direct or indirect infection from animals suffering from the disease. The bulk of these cases are reported to have occurred in outbreaks following the consumption of milk from affected cows. Some of these outbreaks lack evidence of specificity, but in a certain number of them the symptoms described by different observers have presented a remarkably uniform clinical picture, closely resembling the disease in animals. They include aphthæ on the mouth, fingers, and toes, accompanied by pyrexia. The crucial experiment of successfully transmitting the disease from man to calf by inoculation has been reported on two occasions, by Schantyr[1] and by Bertarelli.[2] There can be little doubt, then, as to the transmissibility of foot and mouth disease to man.

The disease in man is usually described as running a mild course, followed by recovery in a week or ten days. Three of the epidemics described by Siegel[3] in Germany and Austria, however, had a high fatality. So far as cases in this country are concerned, a few outbreaks and isolated cases of a suspicious nature have been reported in the past. None, however, has been noted in recent years, nor has any suspicious illness been reported in connexion with the present outbreak.

In view of these facts the question arises why the disease is not more commonly found in human beings, especially in connexion with such an extensive outbreak as that which has prevailed recently in this country. There can be no doubt that innumerable opportunities for the infection of man have occurred during this period, for, although the protection afforded by the Ministry of Agriculture's policy of slaughter must be considerable, there is evidence to show that the milk is infectious in the very early stages of the disease and probably for some days before the appearance of the typical lesions. The complete immunity which our population seems to have experienced from any infection of the sort during this epidemic suggests very forcibly that the infectivity to man of the type of disease prevailing in Britain must be very low. On the Continent cases of supposed foot and mouth disease in man were very rarely reported up to 1872. In this year the disease in cattle assumed a malignant form and reported human cases became much more frequent about this time.

[1] Archia. Verrinarinch Naouk, 1893, p. 87.
[2] Centr. f. Bact., 1908, p. 628.
[3] Zeitschr. f. klin. Med., 1897, p. 147.

On account of the marked variation in the virulence and certain other features of foot and mouth disease some authorities are inclined to regard it as comprising two separate entities. The form which has been observed of late years in this country, including the recent considerable outbreak, has been of the mild type, which might account for the absence of human cases in our population. Opportunities for estimating the mortality among cattle from this type of disease in England have been absent for obvious reasons. In South America, however, where the disease is allowed to run its natural course, the mortality is much greater during those seasons of the year when fresh grass and green fodder are not available and when the animal's food is restricted to hard and dry herbage, which, owing to the lesions in the animal's mouth, leads to wasting and death from starvation. In favourable seasons, on the other hand, comparatively few animals are lost as a result of foot and mouth disease. Reports of continental outbreaks show a mortality varying from 2 per cent. to 50 per cent.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH FOR 1921.

IN accordance with the wish of the Ministry of Health a "survey" or detailed report is to be issued every five years and an ordinary report, giving less detail, is to be prepared for the intervening years. The summary of the Registrar-General, already issued, shows that the high birth-rate of 1920 declined by about 3 to 22·4 in 1921; and that the death-rate (12·1 per 1000) was the lowest ever recorded in the country. In spite of the hot dry summer of 1921 the infant mortality-rate showed an increase only to 83 from 80 in 1920, which was the lowest figure ever recorded. One of the principal points of interest in the reports for 1921, the first batch of which we have received, will be the infantile mortality and diarrhœa rates in different areas.

Finchley.

Dr. W. W. Jameson records for 1921 a birth-rate of 18·8 and a death-rate of 11·3 in an estimated population of 46,680. The infant mortality-rate, which in 1920 was 53·2, has gone up to 71·6, the highest rate since 1911. Fourteen infants died from summer diarrhœa. There was a small outbreak of enteric fever affecting 10 persons during the fourth quarter, the cause of which could not be traced. All the Council's medical activities in East Finchley, consisting of the maternity and child welfare centre, a creche, and the school clinic, have now been housed satisfactorily at Bourchier House, Oak-lane—a good arrangement. Dr. Jameson reports that the arrangements for the treatment of the minor ailments of school children are proving successful and have been drawn up in collaboration with the medical practitioners of the district. The school dentist (Mr. G. H. W. Randell) comments on the proposal to inspect and treat the 6–8 year group and recommends that the three following classes be also dealt with: (*a*) those who have already had treatment and require further attention; (*b*) those who require immediate treatment for relief of pain but who should also have their mouths put in proper order; (*c*) those who require treatment irrespective of age-group.

Hornsey.

Dr. A. T. Nankivell congratulates his town council on the provision of small-pox hospital accommodation, and secondly on "the remarkably low rate of infant mortality" for 1921, 51, for a census population of 87,691. Dr. Nankivell thinks the population figure has been underestimated since the census was taken at the end of a week in June and the week-end habit is now well established. Hornsey is a "dormitory" town, with no slums and no housing question. The birth-rate was 15·9, the death-rate 11·0, and the tuberculosis-rate 1·0. The cancer deaths gave the high rate of 1·61 per 1000. Six cases of ophthalmia neonatorum were notified and no blindness resulted. Dr. Nankivell speaks appreciatively of the work of the volunteers at the maternity and child welfare centres.

The report on the School Medical Service mentions that the hygienic conditions of the schools reaches a high standard. The assistant medical officer of health (Dr. J. R. Prior) helps with the school work and acts as school ophthalmic surgeon. The other school medical services in the borough—viz., the inspection of secondary school children, the treatment of the minor ailments of elementary school children, the operating for tonsils and adenoids, and the administration of gas for the extraction of teeth—are performed by part-time local practitioners, selected by a sub-committee of the education committee. Dr. Nankivell reports that during the year under review this way of staffing these medical services has been generally satisfactory. Energetic "following up," especially of stubborn parents, is practised. The school dentists found that of 5249 children examined 3202 needed treatment. The usual tables show that the proportion of treatment secured is high.

Dewsbury.

For an estimated population of 54,165, Dr. O. M. Holden records a birth-rate of 22·08 and a death-rate of 14·9; he refers to the high infantile mortality-rate of 121·9 as the most unsatisfactory figure of the local statistics. In this connexion we note that there are still about 2000 midden privies needing conversion. Dr. Holden regrets the tardiness of notification of pulmonary tuberculosis. Of 33 notifications, 13 were received a week before death and five after death. The death-rate from all forms of tuberculosis was 0·75. Thirteen cases of ophthalmia neonatorum were notified but it is not stated what damage to the eyes resulted. Dr. Holden tells us that the "conservatism of the people" is a serious obstacle to the establishment of certificated midwives. A qualified midwife began practice during the year but had to leave owing to lack of cases. Under the heading Smoke Observations we read that no infringement of the Act was found in 1921. We hope we may infer that Dewsbury is a model manufacturing town as regards mill chimneys.

Barnstaple.

Dr. J. R. Harper tells us that during 1921 the birth-rate for an estimated population of 18,229 was 18·39, the death-rate 12·6, and the infant mortality-rate 85·1. He says that on the whole the year compares most favourably with the previous ones. There was some influenza of a mild character. Dr. Harper regrets that no further steps have been taken to provide an isolation hospital for this portion of North Devon. There were 18 deaths from tuberculosis, which gives a death-rate of about 1·0 per 1000, a high figure for a rural district in Devonshire.

REPORTS OF SCHOOL MEDICAL OFFICERS.

Bootle.

IN addition to the 3900 children presented for routine examination, 2347 were specially examined. 44 per cent. of the latter were brought forward by teachers, 31 per cent. by parents, which demonstrates the interest both parents and teachers take in the doctor's visit to the schools. By the end of the year treatment was obtained by 77 per cent. of the children requiring it. A marked advance in the treatment of crippling defects followed the appointment of a consultant orthopædic surgeon. Mr. McMurray pays a quarterly visit to the remedial exercise clinic which is in charge of Miss Chuck, the principal of the Liverpool School of Massage. During the year 152 patients made 2376 attendances at the clinic. Of these, 62 were mouth-breathers, and 28 were cases of infantile paralysis. Of the latter, 21 are still attending, but 51 of the mouth-breathers were able to be discharged. There were 71 new cases of scabies, which yielded to

treatment by Marcussen's ointment (described by Lomholt in THE LANCET, Dec. 18th, 1920), and Dr. F. T. H. Wood reports that the results obtained quite justify the claims made of its success in Denmark.

A strenuous endeavour is being made to get rid of verminous conditions in schools. It is disheartening for those concerned to find that, having achieved a considerable reduction in the number of verminous heads, conditions are as bad as ever again after the holidays. An anti-louse campaign throughout the country on lines similar to the anti-fly propaganda appears to be indicated and would probably be productive of good results.

Warrington.

About 4500 children were examined at routine inspections and 82 per cent. of the defects found had received satisfactory treatment by the end of the year. Dr. J. W. N. Joseph last year drew attention to the attendances lost owing to minor ailments, and he has now introduced a system whereby each school is visited by a nurse twice weekly for the purpose of applying dressings and otherwise attending to these cases. In this way nearly 20,000 school attendances have been saved during the year and the work at the clinic is reduced. An interesting investigation into the prevalence of goitre at different ages was undertaken. All the children in the elementary and secondary schools were examined.

Incidence in Age-Periods.

Age and Sex. (B, boy; G, girl).		Slight.	Marked.	Cases with associated signs or symptoms.	Cases in which other members of family are affected.	Number examined.	Percentage affected.
5.	B.	—	—	—	—	717	—
	G.	4	—	—	1	693	0·59
6.	B.	—	—	—	—	855	—
	G.	2	1	2	1	868	0·34
7.	B.	—	—	—	—	792	—
	G.	3	1	—	2	809	0·49
8.	B.	—	—	—	—	809	—
	G.	4	2	—	4	830	0·72
9.	B.	2	—	—	2	762	0·26
	G.	8	4	—	5	728	1·6
10.	B.	1	—	—	—	757	0·13
	G.	6	4	—	5	807	1·2
11.	B.	3	1	—	1	810	0·49
	G.	9	11	9	11	799	2·5
12.	B.	2	1	—	—	811	0·38
	G.	17	8	4	6	806	3·1
13.	B.	2	0	—	1	571	0·35
	G.	24	25	3	13	582	8·4
14.	B.	—	—	—	—	93	—
	G.	4	1	—	—	82	6·09
—		91	59	18	52	13,961	—

Eighteen suffered from nervousness or palpitation.

It will be seen that the greater number of cases occurred amongst girls at puberty and few had associated symptoms.

THE MINIMUM FULL-TIME SALARY.—At a recent meeting of the Worcester Education Committee a letter was received from Dr. Marion Andrews, school medical officer, stating that as the city council had made a deduction from her salary of £500 per annum, which was the minimum sum she could accept under the rules of the British Medical Association, she had regretfully to resign. It was stated that a subcommittee had passed a resolution regretting the necessity for the resignation and expressing a hope that the council would not persist in the reduction. This was made in pursuance of a general reduction in officials' salaries of 10 per cent., and the council gave instructions that any official who did not accept the reduction should be asked to resign. Dr. Andrews pointed out in her letter that the position ought to carry a salary of £750, but she had refrained from asking for advances because of the general financial stringency. Dr. E. H. Corder, a member of the committee, said that the rule as to the £500 minimum was made during the war. General practitioners were now being asked to reduce their fees, both panel and private, and he suggested that perhaps the minimum would now be modified. Mr. W. Sharpe said that the matter had been before the finance committee and they had had their attention called to the facts which Dr. Corder had mentioned, and the committee had decided to write to the B.M.A. asking if some reduction of the minimum was acceptable.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Commdr. L. Kilroy has been placed on retired list with rank of Surg. Capt.

Surg. Lieut. Commdrs. to be Surg. Commdrs.: H. E. R. Stephens, C. F. O. Sankey, E. MacEwan, A. H. Joy, M. C. Mason, A. S. Paterson, R. N. W. W. Biddulph, and E. L. Markham.

ROYAL NAVAL VOLUNTEER RESERVE.

The King has approved of the award of the Volunteer Officers' Decoration to Surg. Commdr. B. H. Morris.

ROYAL ARMY MEDICAL COLLEGE.

Col. C. B. Martin (late R.A.M.C.) to be Commdt.

ROYAL ARMY MEDICAL CORPS.

Col. L. P. More (late R.A.M.C.), from half pay, is restd. to full pay.

Lt.-Col. A. R. C. Parsons retires on retired pay.

Capt. and Bt. Maj. N. V. Lothian relinquishes the actg. rank of Maj.

Capt. D. T. M. Large relinquishes the temp. rank of Maj.

The undermentioned relinquish their commns.: Temp. Majs. (retaining the rank of Maj.) A. G. Higgins, A. E. Atkinson, and C. E. F. Mouat-Biggs; Temp. Capt. G. B. Egerton; Temp. Capts. (retaining the rank of Capt.) J. K. Hamilton, E. P. Peake, H. J. Theriault, and F. J. Power; Temp. Lt. J. D. Leahy (retains the rank of Lt.).

TERRITORIAL ARMY.

Capt. G. D. E. Jones to be Maj.

The undermentioned officers relinquish their commns. and retain their rank, except where otherwise stated: Capts. J. R. Clark, D. C. L. Fitzwilliams (granted the rank of Lt.-Col.), W. T. Homan, and A. H. Platt.

1st S. Genl. Hosp.: Lt.-Col. W. F. Haslam, having attained the age limit, is retired and retains the rank of Lt.-Col.

2nd S. Genl. Hosp: Capt. A. L. Flemming to be Lt.-Col. and to commd. 2nd S. Genl. Hosp.

Genl. Hosps.: Maj. A. W. Moore, from Genl. List, to be Lt.-Col. and to commd. 1st S. Genl. Hosp.

ROYAL AIR FORCE.

Flying Officer T. P. Harpur to be Flight Lt.

Flight Lt. L. Game is granted a short service commn., retaining his present substantive rank and seniority.

The undermentioned are granted short service commns. in the ranks stated: Flight Lt. J. B. Woodrow and Flying Officer J. D. Leahy.

The undermentioned are granted temp. commns. in the ranks stated: Squadron Leader A. G. Higgins and Flight Lt. (Hon. Squadron Leader) E. A. Aldridge.

INDIAN MEDICAL SERVICE.

Maj. D. C. V. Fitzgerald to be acting Lt.-Col. while holding an appointment as Commdt. of an Ind. Gen. Hosp.

Maj. (acting Lt.-Col.) W. E. Brierley relinquishes his acting rank on ceasing to commd. an Ind. Gen. Hosp.

The undermentioned retired officers have been granted rank on retirement as shown: Majs. A. J. M. Binny and K. Barge to be Lt.-Cols.; Capt. C. E. Boulton to be Maj.; G. B. Harland and T. H. Almond to be Capts.

WOMEN'S MEDICAL SERVICE OF INDIA.

Dr. Constance Slater has been appointed to the Women's Medical Service and has taken over charge of the Lady Elgin Hospital, Jubbulpore. Dr. Elizabeth Matthai, Dr. Florence Mason, Dr. Agnes Greig, Dr. Edith Hollway, and Dr. Jane McIlroy have been appointed to the Women's Medical Service, India. Dr. Jane McIlroy has taken up the appointment of lecturer on diseases of the eye, ear, nose and throat, Lady Hardinge Medical College, Delhi. Dr. Alice MacKenzie has been appointed to the charge of the Dufferin Hospital, Allahabad.

OPERATIONS IN PERSIA.

Maj. (A/Lt.-Col.) M. Keane has been appointed an Officer of the Military Division of the Order of the British Empire; Capt. (Temp. Maj.) C. H. H. Harold has been appointed to Bt. Maj.; and Maj. Keane (A/Lt.-Col.), R.A.M.C., and Capt. Harold (Temp. Maj.), R.A.M.C., have been brought to the notice of the Secretary of State for War for distinguished services rendered in connexion with minor military operations in North and North-East Persia during the period 1917–21.

Correspondence.

"Audi alteram partem."

ENDOCRINE INSUFFICIENCY AND CHRONIC INTESTINAL DISEASE.

To the Editor of THE LANCET.

SIR,—In his interesting address on this subject published in THE LANCET of May 13th, Dr. F. J. Sadler draws attention to the three lines of attack necessary in combating many conditions of chronic ill-health, more particularly (1) making good endocrine insufficiency, (2) the discouragement of the intestinal flora, and (3) neutralising the poisons which have passed into the blood, by injecting various forms of protein. He makes appreciative reference to the work of Danysz, who administers bacterial protein prepared from the intestinal flora, using a 24-hours' culture in the agar medium commonly employed. As is well known, the growth from the average stool yields a culture which consists very largely of *B. coli* with a very small proportion of other bacteria, chiefly streptococci. Not infrequently a primary 24-hours' culture consists of a pure growth of *B. coli*; very exceptionally the proportion of *B. coli* falls below 90 per cent.

In the past two years I have studied the intestinal flora as revealed by the use of a new culture-medium consisting of a special saccharose-milk-agar medium, with results which appear to throw some new light on the intestinal flora both in health and disease. The details of this preparation and results obtained from its use will shortly be published. It will be shown that a 24-hours' culture from this new medium—which, I believe, more nearly represents the nutritive conditions obtaining in the human intestinal tract—reveals the existence of a widely different flora from that revealed by the use of the agar medium ordinarily employed. By the use of this new medium it is found that the growth of Gram-positive organisms, mainly of streptococcal form, is increased from an average of about 5 per cent. or less, to 40 per cent. or 50 per cent., and a film from this primary culture on the new medium more nearly reproduces the appearances observed in the fæcal smear. This observation shows that the current teaching that a large proportion of the bacteria in the fæces are dead requires revision. Further, if continuous observations are carried out on the use of this new medium in comparison with the ordinary agar media over a period of many weeks or months, striking curves are obtained confirming the profound influence of nutritive environment on the growth and multiplication of the bacteria normally present in the intestinal tract.

These observations have, I believe, an important bearing on practical medicine; they certainly bear directly on some of the useful and suggestive points brought out in Dr. Sadler's valuable address.

I am, Sir, yours faithfully,

CHALMERS WATSON, M.D.

Edinburgh, May 13th, 1922.

STUDIES IN VACCINIA.

To the Editor of THE LANCET.

SIR,—With reference to the annotation in your last issue dealing with my recent studies in vaccinia, I would like to add that the method of preparation of potent and bacteria-free lymph is practicable for warmer climates where the use of glycerine in high concentration is rendered prohibitive on account of the associated vaccinicidal effect at temperatures exceeding 15° C. Hitherto the method in use in India and elsewhere is to incorporate calf vaccine pulp with lanoline only, a substance which it has been shown is of no bactericidal effect whatever upon the adventitious organisms present in the raw pulp when removed from the calf or young buffalo. A number of experiments have also been made upon the human subject—33 cases in all—with a view to the production of immunity against vaccinia (and, inferentially, against variola) by means of the subcutaneous injection of bacteria-free lymph. In 19 of the cases—none of these having been vaccinated during the previous ten years—vaccination by skin scarification was performed subsequently at an interval of from 15 to 31 days following injection, each person being vaccinated in four places. Of the 76 scarification marks so made only two showed slight, abortive, vesicles which early disappeared, the remaining 74 being entirely negative, thus showing that a most decided degree of protection had been conferred for the time being. That the lymph was fully active was shown by a number of controls which gave 100 per cent. insertion success. The cases are divided into two groups—viz., those formerly unvaccinated, and others. The unvaccinated cases upon subcutaneous injection showed a latent period of from five to ten days before reaction occurred, whilst those previously vaccinated showed a reaction in from six to nine hours following the injection. The symptoms manifested were in all cases limited to the site of the needle-prick and lasted two or three days only. In no instance did an abrasion of the skin occur. The validity of the method of subcutaneous injection to replace that of skin scarification as at present practised can only be established after further extended observation, and the method has much to recommend it to the public. In the first place, there is the benefit, cosmetic, no doubt, of the avoidance of scars, next the elimination of the possibility of septic complications such as seems unavoidable at times in a poor and crowded tenement or native hut, and lastly, the material gain in time on exposure to small-pox of a person requiring re-vaccination, the reaction occurring within a few hours from the time of injection.

Of considerable interest are the cases of hypersensitiveness to subcutaneous injection manifested by certain individuals who, on previous occasions, had shown themselves repeatedly refractory to vaccination by the method of skin scarification. (Not all refractory individuals display this phenomenon.) In these cases subcutaneous injection of the bacteria-free vaccine was followed within a few hours by an intense local swelling of the arm at the site of the needle-prick—the circumference of the arm being increased by no less than 2 inches—there being considerable pain. The swelling lasted three days and then abated. In one instance, the patient (Commander W. M., Royal Navy), despite his painful experience, again offered his other arm 15 days later for subcutaneous injection, when the reaction recurred in all its intensity. Further study is necessary for the elucidation of this phenomenon—the paradoxical association of hypersensitiveness with refractoriness to earlier vaccination—which, for the present, seems to point to the fact that the so-called "septic," "intensely inflamed," or "shocking" arm of vaccination by no means necessarily connotes the presence of septic organisms, or, for the matter of that, of organisms of any description. The hope may be expressed that future research will teach us methods for the amelioration, if not abolition, of these distressing cases.

I am, Sir, yours faithfully,

MYER COPLANS.

The Bacteriological Department, King's College, Strand, W.C., May 16th, 1922.

TRICOCEPHALUS DISPAR.

To the Editor of THE LANCET.

SIR,—I am obliged to Mr. Jean G. Baer for information as to finding *Tricocephalus dispar* in a black enamel dish, but my object was to establish a certain method of dislodging the worm from the mucosa of the cæcum. I want opinions as to the value and dosage of carbon tetrachloride, which is a serviceable remedy for hookworm and possibly also for *Tricocephalus dispar*.

I am, Sir, yours faithfully,

Carlisle, May 14th, 1922. H. A. LEDIARD.

WHY IS SEPTIC AURAL DISCHARGE SO COMMON?

To the Editor of THE LANCET.

SIR,—It is a very sad but no less true fact, as can be verified by visiting the out-patient departments of our special hospitals, the aural clinics of our general hospitals, and especially school clinics, that aural discharge is a very prevalent complaint among the patients attending such institutions. Indeed, it constitutes a large proportion of the number of all cases applying for treatment. The primary cause of nearly all aural discharge is an otitis media arising in the course of the exanthemata, mostly measles and scarlet fever, or during an attack of influenza. In the feverish early stages of these affections a catarrh of the mucous lining of the Eustachian tubes and middle ear is always present, and a septic invasion from the naso-pharynx via the Eustachian tube is likely to take place at any moment, resulting in an acute otitis media in one or both ears. That there is this marked liability to the rapid onset of acute otitis media does not seem to be sufficiently appreciated by the medical practitioner, or he would not be so apt to use such a treatment as syringing the nose and ears, which often ends in precipitating dangerous complications by forcing or facilitating the passage of sepsis from the pharynx up the Eustachian tubes into the tympanic cavity. There is plenty of excuse for the practitioner, however, since this treatment is still ordered by some aurists, and is frequently carried out in fever hospitals and in most school clinics—viz., syringing the ear for the purpose of getting rid of discharge, in place of the mopping out and suction which are the only safe ways of doing so. The involvement of the middle ear, resulting in acute otitis media in the course of scarlet fever, measles, or influenza, almost invariably occurs where enlarged tonsils and adenoids are present, and if these had been thoroughly eradicated in early childhood such complication would almost certainly not have happened.

One of the chief causes, therefore, I hold, of the onset of otitis media and consequent ear discharge is the neglect to carry out this highly necessary preventive operation in early life. Once otitis media has arisen a paracentesis tympani ought to be carried out at once. I consider that incision of the drum-head ought to be a practitioner's operation, since, seeing the patient early, he can operate promptly. The delay in performing paracentesis tympani is another reason why ear discharge is so common.

When discharge has become established the treatment usually applied is, in my opinion, inm ost instances, highly improper, and it must be held to account for the continuance of many aural discharges. The fact that the organisms present in the discharge are all anaerobic is overlooked. Water is essential for their activity. All water should therefore be carefully excluded, and syringing with watery lotions prohibited. Syringing has also the disadvantage of spreading the sepsis further afield into the minute recesses of the ear. Air is inimical to these organisms: it should therefore be freely forced upon them through the Eustachian tubes by frequent Politzerisation, and by rigidly keeping all obstructions out of the meatus, such as plugs of cotton wool. Drops and sprays containing spt. vin. rect. are invaluable, and should be freely and frequently employed if no pain is caused on insertion. The best method of getting rid of accumulated discharge is by suction, which is not made use of as it ought to be, and should entirely take the place of the syringing so frequently employed at the present day. Whenever there is even a threat of otitis media, especially in the course of one of the exanthemata, paracentesis tympani should be at once performed under a general anæsthetic. As soon as recovery has taken place after the exanthemata, the nose and throat should be thoroughly cleared of all obstructions such as enlarged tonsils and adenoids.

Many patients belonging to the hospital class, and even in private practice, drift on under the present futile treatment for months, or even years, and ultimately develop some complication, such as brain abscess or septic meningitis. It is usual for such patients to attend at hosptials once a week, or even once a fortnight, when they ought to be seen daily to have the ear thoroughly and frequently cleaned. Not only are the measures employed faulty, but the attention necessary is not given; this is chiefly because the hospitals are understaffed from the nursing point of view. One well-known aural surgeon has long advocated that a hospital should be founded in London for the exclusive use of ear cases since they require such assiduous attention. This is a proposition worthy of consideration. It is certainly true that our methods of treatment should be reformed, and special provision made to secure a diminution of the large number of aural septic cases so prevalent, especially among the lower classes.—I am, Sir, yours faithfully,

W. STUART-LOW.

Wimpole-street, W., May 12th, 1922.

NASAL DIPHTHERIA AND FOREIGN BODIES.

To the Editor of THE LANCET.

SIR,—With regard to the communications in THE LANCET on May 6th and 13th, a case has occurred in our practice.

Annie B., aged 6 years, was examined at the school clinic on account of a persistent nasal discharge; the swab taken contained Klebs-Löffler bacillus, and she was removed to the isolation hospital as a "carrier" in May of last year, remaining there for five months. In all 20 swabs were examined during her stay in hospital, and these during the first two months were persistently positive. The treatment meanwhile had been local. A course of detoxicated vaccine was then given which apparently had some influence on the infection, for the results of swabs varied, some negative swabs being obtained on several occasions.

It was decided to have the nasal passages examined by Dr. Yorke of Liverpool, who immediately found and removed a piece of rubber about three-quarters by half an inch. Following upon this the discharge cleared up at once and nasal swabs remained negative.

I am, Sir, yours faithfully,

G. C. BARNES.

May 15th, 1922. Medical Officer of Health, Southport.

DIABETES AND THE NEW GERM.

To the Editor of THE LANCET.

SIR,—The attention which has been drawn to the discovery of an alleged germ of diabetes makes it necessary to point out the possible danger attaching to the premature publication in the popular newspaper press of the results obtained. These articles are read by a large number of sufferers who form the opinion that the treatment of their doctor may not be efficacious. But since the attention of the medical profession has been directed in an increasing degree to the question of dietary, the results obtained in treatment have been surprising. Since the total exclusion of carbohydrate from the diet had been definitely ascertained to be ineffective in the treatment of this disease and a controlled amount of this substance allowed to the patient, the mortality has been steadily decreasing through the United Kingdom, as is proved by the recently published statistics on this subject. (See the Mortality Tables published by the Therapeutic Foods Co.)

It is not my intention to belittle in any way the results obtained by Dr. Renshaw and Dr. Fairbrother, or the painstaking manner in which scientific research work is undertaken by the medical profession, but I am sure that the physicians in question would be the first to desire that their interesting discoveries should not prevent the continued pursuit of the research along dietetic lines, which has already yielded such good results in the treatment of diabetes.

I am, Sir, yours faithfully,

May 13th, 1922. J. STENSON HOOKER, M.D.

UREA-CONCENTRATION TEST.

To the Editor of THE LANCET.

SIR,—Having been away on holiday I have only just seen a letter in your issue of May 6th from Prof. Hugh MacLean and Dr. O. L. V. de Wesselow, referring to an article of mine in THE LANCET of April 22nd. In that letter they say :—

"Obviously, he (Mr. Kidd) is not quite certain whether or not he is right in his contention that the test was employed before we introduced it, for he states (quite wrongly as it happens) that 'MacLean says he introduced the test, but I do not feel convinced of this statement.'"

On this question of fact I can only reply by quoting the exact words that anyone can read by opening Prof. MacLean's book "Modern Methods in the Diagnosis and Treatment of Renal Disease" at p. 53. They are as follows :—

"*The Urea-Concentration Test.*—This test was introduced a few years ago by MacLean and de Wesselow, and has given very good results."

Nothing could be clearer than that, and all fair-minded readers must come to the conclusion that Prof. MacLean did say that he introduced the test.

I will now return to the point that needs discussion—namely, the question of priority. I raised the point as I think it is one that is worthy of discussion, being one that has been raised before, notably by Sir John Thomson Walker last year at a discussion at the Medical Society of London on Renal Function Tests. I will give the two tests, McCaskey's and MacLean's, in the actual words of the authors. McCaskey writes, *Medical Record*, March 21st, 1914 :—

"*Method.*—About 6 A.M. the bladder is emptied. Two hours later the urine is collected, and at the same time the patient is given 30 g. of urea, dissolved in 4 or 5 oz. of water. Just before taking the urea, the patient drinks one-half of about 6 oz. of thin cereal gruel, taking the other half immediately after the urea. No other breakfast. The urine is then collected every two hours for 12 to 24 hours, the urea determined for each two-hour period, including the two hours preceding the ingestion of the urea, and from these data the curve of excretion is constructed."

MacLean writes in his book, p. 53 :—

"*Urea-Concentration Test.*—It is carried out as follows: The patient is asked to empty the bladder, and immediately afterwards he receives by mouth 15 g. urea dissolved in about 100 c.c. of water. The bladder is emptied one hour and two hours after the urea has been given and the specimens of urine examined for urea content. Thus if urea is given at 10 A.M. a specimen of urine is obtained at 11 A.M. and at 12 A.M. If either specimen gives a percentage of urea above 2, the kidneys are held to be fairly efficient; the higher the concentration the more effective is the renal function. The reason why two specimens are taken is, that in certain patients the urea given by mouth may produce a diuresis which tends to dilute the urine passed during the first hour. In this case the second hour's specimen should be examined. Indeed, in routine work it is generally best to discard the first specimen altogether, and to rely on the result obtained from the second specimen. Not more than about 120 c.cm. urine should be passed in the second hour. Occasionally, if there is much available fluid in the patient's system, it may be necessary to take a specimen after three hours, or even to repeat the test, but this is seldom necessary. In patients with marked diuresis this must be allowed for in estimating the renal function."

Should MacLean's test then be considered a new test which he has introduced, or should it rather be considered a test which was adopted from Albarran by McCaskey and others, and which has been simplified and improved by MacLean and his fellow-worker? Both workers set out to test the effect on the kidneys after feeding patients with urea artificially by the mouth; McCaskey uses 30 g. in 4 or 5 oz. of water; MacLean uses 15 g. in about 100 c.cm. of water. In both cases the effect on the kidneys is judged by estimating the amount and percentage of urea subsequently excreted in certain periods by the mouth. McCaskey talks of excretion or elimination and maximal output, MacLean talks of concentration. McCaskey's test is longer and more laborious as he measures the quantity and percentage of urea excreted during two-hourly periods for 12 or 24 hours, but he shows in his charts that the most marked period of urea excretion is usually, but not always, during the few hours following the urea meal, and specificially refers to it on p. 511 of his article as the highest bi-hourly output and as one of the three points to be attended to in studying the effect of forced elimination of preformed urea, and in various other passages which can best be summarised by quoting his conclusion No. 4 :—

"This differentiation can best be determined by surcharging the blood with the different substances in question and determining the rate of excretion of each, first over a brief period of time, *while the blood remains heavily surcharged*, and again over a longer period to determine the duration of time required to depurate the blood of a morbid excess."

MacLean takes advantage of this point to simplify the test, and contents himself with measuring the amount and percentage of urea excreted or "concentrated" during the two- or three-hourly periods which follow the urea meal and interpreting it by the rise of urea excretion or concentration to over 2 per cent. in one of these periods. The chief difference, then, seems to be that McCaskey talks of urea fed artificially into the blood through the mouth as being excreted by the kidney, whereas MacLean calls the process of excretion, concentration. The actual process carried out by the kidney is the same whatever the process is called, and this process is tested in the same manner by both workers, though MacLean places a different construction on his results. McCaskey lays stress on three points in estimating the results of his test, one of which he calls the highest or maximal bi-hourly output. MacLean only lays stress on one point—namely, the maximal percentage of urea excreted, or, as he calls it, concentrated, in the first two- or three-hourly periods. This is in reality exactly the same point that McCaskey stresses in his maximal two-hourly output, save that he takes a two-hourly period of excretion or concentration rather than an hourly period. The difference between the two tests is that McCaskey's is likely to be more accurate as it considers three factors, whereas MacLean's test is easier and quicker to perform as it only considers one factor, but for that reason it is more open to error; and as McCaskey shows in some of his charts, the period of maximum output or highest concentration may not always occur during the first four hours but somewhat later, so that MacLean's method of testing may sometimes miss this point.

I am, Sir, yours faithfully,

FRANK KIDD, M.Ch.

Harley-street, W., May 15th, 1922.

MOROCCO BOUND.

To the Editor of THE LANCET.

SIR,—May I crave a space in your columns for an announcement which reaches me from my friend Dr. Gardette, editor of *La Presse Thermale et Climatique*, concerning two voyages for medical men which he is organising to the Moroccan coasts for the late autumn? The first starts from Bordeaux on Sept. 20th and returns to Marseilles on Oct. 22nd. The second starts from Marseilles on Oct. 19th and returns to Bordeaux on Nov. 23rd. The accommodation both in transport and sojourn will be what is known as first class, and there will be no tips. The price for a medical man is 4750 francs (about £95), and for an accompanying wife or daughter 4950 francs (about £100). Further details may be obtained from Dr. Gardette, 3, rue Humboldt, Paris.

I am, Sir, yours faithfully,

LEONARD WILLIAMS.

Harley-street, W., May 10th, 1922.

THE annual meeting of the supporters of the Children's Country Holidays Fund will be held on Saturday, May 27th, at 3 P.M., at the Whitehall Rooms, New Metropole Hotel, Northumberland-avenue, when the Countess of Athlone will preside, and Lord Finlay, the Rev. H. R. L. Sheppard, and Dame May Whitty will address the gathering.

Obituary.

ROBERT BRUCE LOW., C.B., M.D. EDIN., D.P.H. CAMB.,

LATE ASSISTANT MEDICAL OFFICER, MINISTRY OF HEALTH.

WITH feelings of deep regret we record the death on May 11th, after a short illness, of the distinguished epidemiologist and sanitarian, Dr. Robert Bruce Low. He was in his seventy-seventh year, and up to within a week of his death he was engaged in literary work of much importance to the public health service.

Bruce Low was born in Edinburgh in 1846 and educated at the Royal High School and University of his native city. After graduation in 1867, he acted as house surgeon at the Royal Infirmary, Edinburgh, and then devoted a year to post-graduate study at St. Thomas's Hospital, London, and at the Universities of Wurzburg and Berlin. He next practised as a rural general practitioner for 19 years, the first four of which were spent in Lincolnshire and the remaining 15 at Helmsley, in the North Riding of Yorkshire. During the latter period he became medical officer of health for Helmsley Rural District, and district medical officer, public vaccinator, and workhouse medical officer to the Board of Guardians of the Helmsley Union, besides being Deputy Coroner for the North Riding of Yorkshire. He also took a prominent part in the volunteer movement and became surgeon-major to the 2nd Volunteer Battalion, Yorkshire Regiment.

The life of a general medical practitioner in a sparsely populated area was far different in those days. There were then few really good roads in the district, and Bruce Low, when visiting his patients, had to undertake long journeys over the moors on horseback, and during periods of stress he spent much time in the saddle and was often without sleep for several days and nights. His horsemanship called forth the admiration of his farmer patients quite as much as his medical proficiency. Short in stature, a light weight, distinguished in appearance, always immaculately dressed, Bruce Low was one of the best examples of the practitioner of the old school. The accent he brought from over the Scottish border he never lost, and not only those who came into conflict with him but his own personal friends realised that he had only one opinion on any subject, and that was an honest one. He possessed pluck and perseverance and a wide sympathy with his fellow man, and soon won the hearts of rich and poor alike by the skill which he brought to bear on the treatment of his patients, his steadfast devotion to duty, his kindly personality, the catholic charity which characterised all his actions. When he entered a house he was greeted not merely as "the doctor" but as a friend of the family who knew or could be trusted with all the secrets jealously guarded from everyone else. So great was their faith in his wisdom and judgment that in all matters of difficulty they appealed to him for help. Even in domestic quarrels the remedy at once suggested by neighbours was, "Send for Mr. Low."

Soon the importance of preventive medicine, then in its infancy, became impressed upon his mind as a result of his observation of the part played by environmental conditions on the health of the people. His interest in this aspect of medicine was stimulated by conversations with his friend, William Henry Power, at that time a Medical Inspector and later the Medical Officer of the Local Government Board, who used to visit Bruce Low from time to time for the purpose of inspecting his work as public vaccinator. Their discussions of problems relating to epidemiology probably dictated Bruce Low's public career. In 1879 he took the D.P.H. of Cambridge University, and during his tenure of office as M.O.H. of Helmsley Rural District did much to promote the public health of the area, not merely by effecting improvement in the sanitary circumstances of the district, but also by impressing upon the people the necessity of observing the laws of healthy living. These efforts to introduce sanitary reforms were at first bitterly opposed by local and influential persons, but his earnestness and determination prevailed, and some who had begun by doing everything in their power to obstruct became in the end his staunchest supporters. His experience caused him to publish in 1886 an article on the tenure of office and appointment of medical officers of health, in which he showed the necessity to secure for these officers better terms of appointment and protection against arbitrary treatment by sanitary authorities. In after life it was the memory of his early struggles in the cause of hygienic efficiency that made Bruce Low the sympathetic and understanding friend of all part-time medical officers of health.

As a result of the favourable impression which the Central Health Authority had formed of Bruce Low's public work in Helmsley and of his recognised ability as a medical practitioner of high standing, he was invited, in 1887, to become a medical inspector of the Local Government Board, an invitation which he readily accepted, despite the fact that he incurred thereby substantial pecuniary loss in exchanging a remunerative practice for the salary offered by a Government department. Before leaving Helmsley he was entertained to a farewell dinner, presided over by the then Earl of Feversham, at which all the leading men of the district were present. At this dinner many speakers testified to the usefulness of the work which Bruce Low had performed and to the esteem and affection in which he was held by all. The successor in his practice stipulated that Bruce Low's brass plate should remain on the door of his house, and it is there to this day.

On joining the staff of the Local Government Board, Bruce Low commenced his new duties with characteristic enthusiasm and energy. He had the advantage of being brought into intimate association with the three great exponents of the science of hygiene in its broadest aspects—namely, Buchanan, Thorne-Thorne, and Power—who as successors to John Simon, the founder, were engaged in building up the fabric of the English public health service. Under their direction he had daily opportunity of studying the many and varying problems relating to epidemiology and public health administration. The personal influence of his early colleagues was reflected in all his subsequent work, and he was ever anxious to acknowledge his indebtedness to them. His published reports to the Local Government Board cover a wide range of subjects and relate to the sanitary circumstances and administration of many districts and to outbreaks of small-pox, diphtheria, diarrhœa, enteric fever, influenza, pneumonia, cerebro-spinal fever, cholera and plague, and suspected plague in England and Wales. Probably the best known of his reports relating to water-supplies are those on the River Trent area of Lincolnshire and Nottinghamshire (1893), and the pollution by sewage of the River Dee (1896). In 1904 he wrote on the arrangements in Germany for the isolation of small-pox and in 1905 on the State vaccine establishments of that country. However, the work that made his name known throughout the world, and which brought him into close association with members of the medical profession in many countries, was his writings on the epidemiology of disease. He wrote a series of reports which were carried on over a succession of years, and included the Progress and Diffusion throughout the World of Plague, Cholera, Yellow Fever, and the Epidemiology in Recent Years of Exanthematic Typhus (1915), Acute Anterior Poliomyelitis (1916), and Small-pox (1918). The study of disease distribution throughout the world led Bruce Low to acquire a comprehensive knowledge of port sanitary administration, and in reply to an inquiry by the Rockefeller Institute he furnished "A short historical statement showing the steps which led up to the abandonment of quarantine in the United Kingdom." This was published later

in the annual report of the medical officer of the Local Government Board, 1917–18.

Bruce Low was appointed Examiner in Sanitary Science, State Medicine, and Public Health by the Universities of Edinburgh, Glasgow, Leeds, and Cambridge. The confidence placed on his judgment and fairness was illustrated by his being, for practical purposes, the sole examiner in Part II. of the D.P.H. Examination at the last-named University during several years of the war period. After he had ceased to be an Examiner in 1919, he was appointed by the General Medical Council as Inspector of Examinations to visit the examinations of the 22 examining bodies that grant degrees and diplomas in public health and sanitary science in the United Kingdom and Ireland, with the object of ascertaining whether need of improvement existed in the course of study and standard of knowledge required of candidates, and to formulate a comprehensive scheme to secure for each of the various examinations a common standard of proficiency. This duty occupied the best part of the last two years, and his comprehensive and valuable report is now under consideration by the General Medical Council. It is not too much to say that it is the basis of the reforms now proposed, which cannot fail to have a far-reaching and a long-reaching effect. It is an appropriate crown of his labours.

Bruce Low served on the War Office Anti-Typhoid Inoculation Committee from 1904–1912. He was a member of the Council of the Epidemiological Section of the Royal Society of Medicine, and a Fellow of the Society of Tropical Medicine. He was promoted to be an assistant medical officer of the Local Government Board in 1900, and in 1911 he was retired from the public service, having reached the age-limit. His retirement was of short duration, for owing to the death of one and the serious illness of another of his colleagues, he was recalled to duty for a short period in the same year and again in the following year, while, in September, 1914, he rejoined the staff for war work and was only finally retired in May, 1920. He was willing at all times to assist and advise members of the profession and other interested persons in matters relating to public health and this earned for him the respect and esteem of many. To his colleagues of all grades he was a constant and true friend; it is probable that he was never happier than when assisting, instructing, and advising them in their work, and when placing his wide knowledge and experience at their disposal; in their turn they valued and appreciated his kindly teaching and counsel, and all cherished towards him a deep and affectionate regard. He was proud of being a Civil Servant, and in his life and by his work he personified the highest ideal of the old Civil Service. The worth of his long and distinguished career in the service of his country, of public health, and of medicine was officially recognised in 1919, when he was appointed C.B.

SIR HENRY DAVY, M.D. LOND., F.R.C.P. LOND., HON. D.SC. SHEFF.

THE death of Sir Henry Davy occurred on May 10th at his residence in Exeter. Born in 1855, he was the youngest son of the late Mr. Henry Davy, solicitor, of Ottery St. Mary. He received his early education at Honiton Grammar School and subsequently became a student at Guy's Hospital, where he took first prize for first-year students in 1875. He qualified M.R.C.S. in 1877, and took his M.B. Lond., with honours in obstetric and forensic medicine, in the following year. In 1879 he secured the Gurney Hoare Prize for clinical medicine at Guy's, and in 1882 took his M.D. degree at the University of London. In 1894 he was made a Fellow of the Royal College of Physicians of London. Before settling in Exeter in 1880, Sir Henry Davy held the posts of house surgeon to the Evelina Hospital for Sick Children, house physician and resident obstetric assistant at Guy's Hospital, and resident clinical assistant at St. Luke's Hospital for the Insane. In 1881 he was appointed physician to the Royal Devon and Exeter Hospital, and served the hospital in this capacity until 1920 when he was appointed to the consulting staff. He was also consulting physician to the Exeter Dispensary. During the war he became Lieut.-Colonel in the A.M.S. and acted as consulting physician to the Southern Command. His war service was recognised by a C.B. in 1917, and a K.B.E. in 1919.

The high appreciation in which Sir Henry Davy was held by his professional colleagues was shown by his election to the presidency of the British Medical Association for the year 1907–08. His popularity among the people of Devon was remarkable. He was a Devonian by birth and ancestry and loved the county, enjoying nothing better (at least until the advent of the motor-car) than to ride his bicycle along its shady lanes or across its vast moors. He was familiar with all sports and to the end was a keen fly-fisherman. Almost the last present he received was from a colleague who shared his hobby and presented him, to his great joy, with some special flies. Devonians came to rely on him and trust him as a brother. His local colleagues had every reason to look on him as a true friend, for he made many a long winter journey to see a sick practitioner or a member of his family, and many a kindly gift in times of stress has remained unrecorded. But Davy was above all things a widely read skilful physician. When a student, before the days of blood-stains, he made, with Dr. G. Mackern, some excellent original observations on the blood corpuscles in pernicious anæmia,[1] and his subsequent publications include notes on cases with movable kidney, on the atrophy of the suprarenal bodies in Addison's disease, and an account of some war diseases of which he had had experience. A few days before his last illness he took out his notebook to record accurately a scientific fact which was new to him. Owing to this keen desire to increase his knowledge he made the most of unusual opportunities. On his appointment as physician to the Exeter Hospital with about 30 beds under his care he was only 26 years old, and at the age of 30 he was already the medical man of outstanding position in Exeter, called in for counsel by his colleagues when faced with difficult cases. From his student days he had made careful notes of his cases and he continued to do this systematically. He was extraordinarily familiar with practical points in medicine and often seemed to diagnose a case by intuition—yet a question or two would reveal the fact that the diagnosis was based on sound experience and he could almost always turn up promptly notes of a parallel case seen earlier in his career.

Davy was a man of wide general sympathies. He mixed freely with laymen and took a large share in the civic life—giving a year's service as sheriff when his practice was already a large one. From that time onward his advice was sought by the leading men in the city in all that pertained to its welfare, and his loss will be widely felt outside as well as inside professional circles.

Sir Henry Davy was twice married. He leaves a widow and one daughter; his only son was killed in the war.

HENRY GEORGE FELKIN, M.D. LOND., M.R.C.S., D.P.H.

Henry George Felkin, who died on May 8th after a short illness, was in his fifty-fourth year. Part of his early education was obtained in Germany, where his father resided, and later he went to Wolverhampton Grammar School. He studied his preliminary medical subjects at St. Bartholomew's Hospital, entering later at the London Hospital for the medical curriculum. He qualified M.R.C.S., L.R.C.P. in 1893, obtaining the M.B. degree of London University, with honours in medicine, in the same year. He passed the M.D. examination in 1896 and the D.P.H. in 1898. He held the posts of house surgeon at the London Hospital and house physician at the Brompton Hospital. At

[1] THE LANCET, 1877, i., 642.

the latter institution he subsequently became resident medical officer, a post he occupied with distinction, being able to develop therein notable administrative gifts. In 1901 he joined Dr. R. Mander Smyth at Linford Sanatorium, Ringwood, New Forest, where he remained till his death. Dr. Felkin possessed a strong personality and was somewhat reserved, but his reserve did not obscure a marked kindliness and helpfulness, which, together with his special experience of tuberculous disease and his great administrative power, found congenial expression in the work of the sanatorium. This institution he kept at a high level of efficiency, and it is not too much to say that he thought of little else, devoting himself almost entirely to it and to the welfare of his patients, by whom he was frequently called "father."

Dr. Felkin was a man of culture, possessing a tenacious memory; he was a devoted student of Roman history and of the English classics, but it was only with difficulty that he was ever persuaded to read a modern novel. He was a keen sportsman, and nothing gave him greater pleasure than a day in the Forest with a dog and a gun. Although he led a very busy life, he sat for three years on the Ringwood Rural District Council as representative for Broomy, and took a keen interest in this public work. Dr. Felkin married in 1905 and leaves a widow.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MAY 10TH.

Impure Milk at Newcastle.

Mr. GRATTAN DOYLE asked the Minister of Health whether he had yet taken any and, if so, what steps to deal with the question of the sale of impure milk in Newcastle-on-Tyne, wherein it was stated on official authority that in the analysis and bacteriological examination of samples recently taken approximately 50 per cent. showed really serious pollution; and whether this serious menace to the health of the citizens would receive immediate attention and drastic treatment.—Sir A. MOND replied: As I promised last week, a medical officer of my department is now visiting Newcastle and is inquiring into this matter.

Overcrowding in Swansea.

Mr. KENNEDY asked the Minister of Health if his attention had been drawn to reports of statements made by the local medical officer at a recent meeting of the Swansea Board of Guardians to the effect that many families were in the workhouse on account of being unable to find accommodation outside; that the evil of overcrowding was general in Swansea; that, in a case cited, eight families were paying £400 per annum for accommodation in one house, the standard rent of which was £15; and whether, in view of those disclosures, any action would be taken in the interest of public health and for the protection of families compelled to accept accommodation as sub-tenants.—Sir A. MOND replied: My attention has not previously been drawn to the statement of the local medical officer referred to, but I am aware of the housing conditions in Swansea. I have authorised the erection by the Swansea Corporation of 789 houses under the State-aided housing scheme, of which only 183 have hitherto been completed, and I am of opinion that the conditions mentioned will best be remedied by pressing on with the completion of the remaining houses. I may add, in reference to the last part of the question, that bye-laws made by the town council under Section 26 of the Housing, Town-Planning, &c., Act, 1919, which are specially directed to this point, have recently come into force.

The Rockefeller Institute of Hygiene.

Mr. MYERS asked the Minister of Health how he proposed to dispose of the Rockefeller gift of $2,000,000 and the additional Government grant of £25,000 for five years; and what part of this large sum was to be devoted to promoting hygiene and the health of the people.—Mr. NAYLOR asked the Minister of Health whether the Rockefeller gift of $2,000,000 to establish an institute of hygiene in this country was to be allocated to any already existing institute of hygiene, or other and like institutions, for the development of their work; if not, how this sum was to be disposed of; and what part, if any, was to be devoted to promoting hygiene and the health of the people.—Sir A. MOND replied: The gift from the Rockefeller Foundation of $2,000,000 will be applied to the express purpose for which it was made, in providing and equipping a school of hygiene. The Government grant will be applied to staffing and maintenance, as required by the Rockefeller Foundation as a condition of their gift. The hon. Member may be aware that the Rockefeller Foundation have recently acquired an admirable site for the purpose in Bloomsbury. The whole object of the scheme is to promote the hygiene and health of the people by providing facilities for the education of the medical practitioner and for research in preventive medicine. It will be an essential point in settling the organisation of the school to secure that its work is fitted in with the admirable work in this sphere which is now being done by existing institutions.

Mortality Figures and Overcrowding in Newcastle.

Mr. CAIRNS asked the Minister of Health if he was aware that, for the year 1920, in the city of Newcastle-on-Tyne, 843 births occurred in one-room dwellings and that 167 of those children died, mortality 198·1 per 1000; that 2155 births occurred in two-room dwellings and that 291 died, which was 175·3 per 1000; that 1529 children were born in three-room dwellings and that 171 died, being at the rate of 111·0 per 1000 mortality; and, if these statements were true, would he try to put a stop to such a state of affairs by erecting more suitable homes for the poor.—Sir A. MOND replied: I am aware of the report of the medical officer of health of Newcastle containing the particulars in the first part of the question. The housing situation in Newcastle is that approval has been given under the local authorities scheme for 1003 houses, of which 482 have been completed, 289 are in various stages of construction, and 232 have not yet been commenced. I shall continue to keep the situation under careful review.

Salaries of Women Health Visitors.

Mr. GALBRAITH asked the Minister of Health whether he had made any recommendation as to the salaries to be paid by local authorities to women health visitors; and, if so, whether he was satisfied that the salaries paid in accordance with his recommendation were adequate to secure efficient service.—Sir A. MOND replied: I have made no general recommendation as to the salaries to be paid to health visitors, but in various particular cases I have taken action to secure such remuneration as will provide an efficient service.

Public Grants for Vivisection.

Lieut.-Commander KENWORTHY asked leave to introduce under the ten minutes rule a Bill "to prevent the application of public money to vivisection experiments." He maintained that the Bill was a practical attempt at economy. It was not his object to prohibit vivisection. There was nothing in the Bill to prevent these experiments being continued at the expense of learned societies and others who cared to do so; but in these times he did not think that it was right that public money should be granted for this purpose, especially as that money came, in part, out of the pockets of people who had scruples against these experiments. Before the war he understood that the amount of money spent upon medical research was about £60,000 a year; it was now over £120,000 a year. Of that a considerable amount—about £30,000 or £40,000—was, he believed, spent on these experiments. The salaries of those engaged in research—all of whom were not employed in vivisection—amounted to £38,000, and he thought that that substantial sum could be saved without any harm being done to the body-politic.

Dr. MURRAY said that he was always so impressed with the almost unlimited wisdom of his hon. and gallant friend upon every other subject that he was glad to find that he was human and could err upon this one. He would, however, have expected him to have made a frontal attack rather than this flank attack upon experimental research. It would have been more frank and candid on his part if he had brought in a Bill to abolish experimental research of this kind. He (Dr. Murray) disliked the word vivisection and preferred to refer to it as experimental research. His hon. and gallant friend had given as his principal reason that there were conscientious objectors to experimental research in the country. He had not brought in a Bill, however, to prevent public money being wasted upon the navy and the army because there were conscientious objectors in the country who would be taxed, as they said, for killing other people. There were two reasons why public money should be spent upon experimental research. Vivisection had been the means of advancing medical research within the last 30 or 40 years to an extraordinary degree. For example, there was the surgery of the brain. They could not experiment upon human brains. (Hon. Members: "Why not?" and laughter.) The experiments made on animals had been the cause of great progress in the surgery of the brain and that had been the means of saving thousands of lives. More money should be spent, and liberally spent, on research of that kind. Many lives, too, had been saved by the experi-

ments on antitoxin in connexion with diphtheria. One of the most recent advances in medical science had been the result of experimental research in connexion with the pituitary gland at the base of the brain. That one experiment alone had been the cause of saving thousands of lives of men who were suffering from shock sustained in the war.

On a division, leave to introduce the Bill was refused by 170 votes to 102.

THURSDAY, MAY 11TH.

Readjustment of Pensions.

Mr. BETTERTON asked the Minister of Pensions how many forms, M.P.A. 101 B, which state that, in accordance with the provisions of the Royal Warrant of 1919, the award notified in the communication accompanying the form was liable to readjustment in and after the year 1922, had been issued by the Ministry of Pensions; on whose authority and to whom these forms were issued; and what steps had been taken to correct the misstatement contained therein and to remove the anxiety created in the minds of pensioners.—Mr. MACPHERSON replied: I am afraid that it is not possible to say how many of the incorrectly printed notices referred to were issued. I can, however, assure my hon. friend that all possible steps have been taken to correct the error, and I feel satisfied that pensioners are well aware that there can be no readjustment of rates before April 1st, 1923.

G.N.C. and Nurses' Training.

Captain AINSWORTH asked the Minister of Health whether, in considering the recent decision of the General Nursing Council for England and Wales which recommended that no hospital should be recognised as a training school for nurses unless possessing 100 beds, he would take into account the particular circumstances of each hospital before agreeing to any such rule as that desired by the General Nursing Council.—Mr. PARKER (Lord of the Treasury) replied: My right hon. friend has asked me to reply to this question. No rule on this subject has yet been submitted for his approval, and until he has had an opportunity of considering its precise terms it would be premature to make any statement.

Condensed Milk and Seamen's Health.

Mr. HURD asked the Minister of Health if his attention had been called to the fact that condensed milk produced in the United States of America did not ordinarily conform to the standard of quality stipulated in the conditions of Admiralty contracts; and, if so, whether in any forthcoming legislation to deal with milk-supplies, he will lay down conditions for the protection of consumers of condensed milk generally similar to those imposed by the Admiralty to safeguard the health of our seamen.—Mr. PARKER replied: My right hon. friend has asked me to reply. He is aware that much of the condensed milk imported into this country from the United States of America is not concentrated to the extent specified in Admiralty contracts.

Pension Ministry Hospitals.

Lieut.-Colonel SPENDER CLAY asked the Minister of Pensions how many hospitals were now maintained by the Ministry, where they were situated, and how many cot cases there were in each.—Mr. MACPHERSON replied: There are 52 hospitals wholly maintained by my department at which approximately 10,000 officers, nurses, and men are at present receiving in-patient treatment.

Suggested Inquiry into Milk Prices.

Mr. MYERS asked the President of the Board of Trade whether he had received a resolution expressing the view that there could be no sufficient supply of milk at a reasonable price unless the producers received a fair return and the cost of distribution is reduced by eliminating the operation of trusts and monopolies, and demanding that in the interests of the general public, particularly the child population, a public inquiry should be held into the whole question of milk prices, including the operations of the milk trust, which was at present exploiting both the farmers and the consumers; and whether he proposed to take action on the lines indicated.—Sir A. GRIFFITH-BOSCAWEN (Minister of Agriculture) replied: I have received the resolution referred to. An agreement has recently been arrived at in regard to the prices to be paid to producers, and I do not think that exception can be taken to current retail prices. I do not consider that any action of the kind suggested is needed.

Duty on Radium Bromide.

Lieut.-Colonel WALTER GUINNESS asked the President of the Board of Trade whether radium bromide is now subject to an importation duty under the Safeguarding of Industries Act; and, if so, whether he would take steps to remit this duty in the case of all radium for therapeutic purposes.—Mr. STANLEY BALDWIN replied: The answer to the first part of the question is in the affirmative. I have no power to take the action suggested in the latter part of the question.

MONDAY, MAY 15TH.

Merchant Shipping (Venereal Disease) Bill.

Major COLFOX presented a Bill to amend the Merchant Shipping Acts, 1894 to 1906, so far as they relate to venereal disease, which was read a first time.

TUESDAY, MAY 16TH.

Medical Boards in Scotland.

Mr. DUNCAN GRAHAM asked the Minister of Pensions the number of doctors engaged on the various medical boards in the West of Scotland; whether they were permanently employed; what were the salaries paid to them; what were their duties; and whether they had received any instructions recently from his department with respect to the need for economy in the assessment of disability allowances.—Major TRYON replied: The personnel of these medical boards is drawn from a panel of some 200 local practitioners who are employed on a sessional basis, and are paid at the rate of £1 11*s.* 6*d.* for chairman and £1 6*s.* 3*d.* for other members for each session of two hours. The boards are responsible to a small whole-time medical staff in charge of the arrangements for boarding and the provision of treatment in this area, and their duties are to assess the degree of disablement and to report generally on the medical aspect of the case. As regards the last part of the question, my right hon. friend has stated repeatedly that no instruction of the nature suggested has been, or will be, issued by his department.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia of the College was held on May 11th, Sir Humphry Rolleston, the President, being in the chair.—The 14 Members detailed in our issue of May 6th were admitted to the Fellowship.—Dr. Raymond Crawfurd was elected Senior Censor on the selection of the Council. He then took the oath and gave faith to the College.—A licence to practise physic was granted to Yassa Sudki Soliman, Cairo and St. Thomas's Hospital.—Diplomas in Public Health were granted, jointly with the Royal College of Surgeons, to the successful candidates.—Communications were received relating to the attendance of Fellows and Members of the College in connexion with the processions in the appeal for the hospitals on Empire Day, and permission was accorded.—The College seal was affixed to a Latin address to the University of Padua on the occasion of their Seventh Centenary.—A report from the Censors' Board concerning alterations of a resolution of the College and certain by-laws was received, discussed, and then referred back to the Censors' Board for further consideration.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary council meeting was held on May 11th, the President, Sir Anthony Bowlby, being in the chair.—Mr. Charles Brook, of Lincoln, and Mr. William Coates, of Manchester, were introduced, and, after signing the by-laws and making the required declaration, were admitted Fellows of the College.—A report was read from the Court of Examiners respecting candidates found qualified for the Diploma of Member, and diplomas were granted to the following candidates already licensed by the Royal College of Physicians:—

•Edith I. L. Abbott, Univ. Coll.; S. Ackroyd, Leeds; M. Ahmad, Calcutta and King's Coll.; D. R. Ainsworth, Manch.; •Janet K. Aitken, R. Free; •Ruth M. Arkwright, St. Mary's; W. F. Attwater, Camb. and Guy's; C. W. C. Bain, Oxf. and St. Thomas's; F. J. Benjamin, Durh.; L. A. Bennett, N. Zealand and Lond.; H. C. Berlie, Madras and St. Mary's; H. J. Bhatia, Bombay and Middx.; A. M. F. Browne, Calcutta and St. Mary's; C. B. Byrd, Liverpool; A. W. Carleton, Calcutta and Univ. Coll.; R. B. Chandrachud, Bombay and Guy's; A. J. Chiappa, Middx.; R. W. Cockshut, Liverpool; •Doris B. Collier, Univ. Coll.; •Gwendolen C. Cotton, R. Free; W. L. S. Cox, Univ. Coll.; D. I. Currie, Leeds; J. G. D. Currie, Camb. and St. Thomas's; R. L. Dagger, Durh.; H. S. Davies, Cardiff and St. Thomas's; C. C. Elliott, Birm.; W. C. Faull, St. Mary's; C. E. Fenton, Lond.; A. C. Fernando, Ceylon and Univ. Coll.; •Ena D. Foster, R. Free and St. Mary's; R. M. Fry, St. Mary's; R. M. Galloway, Edin.; M. Garden, Lond., Manch., and Univ. Coll.; M. Garfield, Univ. Coll.; F. A. Gaydon, St. Thomas's; J. E. Gaze, Charing Cross; A. A. Gemmell, Camb. and Liverpool; Nancy K. Gibbs, Cardiff and Univ. Coll.; •Dorothy Gibson, Lond.; •Irene M. Golding, Lond.; J. H. H. Gough, Camb. and St. Thomas's; E. F. Griffith, St. Mary's; F. J. S. Hall, St. Mary's; E. Hardy, Guy's; B. Homa, St. Bart's.; A. O. Jones, Liverpool; H. B. Jones, Guy's; T. E. Jones, Cardiff and Guy's; B. Kessel, Guy's; H. C. Killingback, St. Bart's.; J. Kindness, Charing Cross; D. Krestin, Lond.; W. Laing, Durh. and St. Bart's.; K. W. Leon, St. Bart's.; J. N. Loring, St. Thomas's; E. V. Luprian, Madras and St. Mary's; D. C. McIntosh, Univ. Coll.; D. W. McKay, Toronto; M. Mackenzie, Guy's; N. S. Macpherson, St. Thomas's; •Phyllis M. Manson, R. Free; •Gladys H. Marchant, Calcutta and R. Free;

*Clara E. Mathias, R. Free; Y. Maximoss, Middx.; F. R. L. Miller, St. Bart's.; J. K. Milward, Guy's; A. Mitchell, King's Coll.; W. E. M. Mitchell, St. Bart's.; *Olga M. Naylor, R. Free; G. J. V. Nelken, St. Bart's.; R. W. Nichol, Camb. and St. Thomas's; M. Nurick, Lond.; C. P. Oliver, Camb. and St. Thomas's; T. C. Oliver, Lond.; *Hilda W. Page, Univ. Coll.; C. V. Patrick, Camb. and St. Thomas's; V. D. Pennefather, Singapore and Lond.; Edith C. Phelps, R. Free; E. D. Pridie, Liverpool; *Gladys H. Randall, Charing Cross; H. Rast, Berne; *Sybil M. Rees, Cardiff and Charing Cross; B. T. Richards, Birm.; *Esther Rickards, R. Free and St. Mary's; D. Robertson, Leeds; A. E. Roche, St. Bart's.; Abd-E'-Hakim Sabry, Charing Cross; J. W. Sinclair, Toronto; E. F. Smith, St. Thomas's; *Dulcie C. Staveley, R. Free; G. H. T. Stovin, Lond.; M. L. Sutcliffe, Univ. Coll.; *Mary I. Symons, Lond.; J. G. Tait, Edin.; M. Theiler, Cape and St. Thomas's; D. C. Thomas, Cardiff and Middx.; *Winifred A. M. Thompson, R. Free; N. F. Tillander, Upsala and Univ. Coll.; L. J. Timings, Birm.; *Eileen M. Turner, Univ. Coll.; K. L. Ward, Lond.; *Hilda M. Whitfield, Univ. Coll.; F. W. Widgery, Guy's; H. N. Williams, Univ. Coll.; *Muriel B. Williams, R. Free; S. J. Woodall, Manch. and St. Bart's.; L. S. Woolf, St. Mary's; and *Eva Young, R. Free.

* Under the Medical Act, 1876.

A report was read from the Secretary respecting a candidate found qualified for the Licence in Dental Surgery, and a licence was granted to Mr. Thomas Frederick Newton.

A report was read from the Secretary of the Conjoint Examining Board respecting candidates found qualified for the Diploma in Public Health of the two Colleges, and diplomas were granted jointly with the Royal College of Physicians to the following candidates:—

S. N. Bardhan, Calcutta and R. Inst. Public Health; A. H. Butt, Punjab and Univ. Coll.; K. N. Choksy, Bombay and King's Coll.; D. M. Connan, Westminster and King's Coll.; C. H. Dawe, Univ. Coll.; F. W. W. Dawson, Westminster and R.A.M.Coll.; W. A. S. Duck, Middx.; H. T. Findlay, Glasgow and R.A.M. Coll.; M. W. Geffen, Univ. Coll. and Bradford Tech. Coll.; S. T. Gunasekara, Ceylon and Univ. Coll.; P. Gupta, Calcutta and Univ. Coll.; W. M. Howells, Glasgow and R. Inst. Public Health; Eleanor Heald Kelly, Edinburgh and Univ. Coll.; A. T. Kuriyan, Glasgow and Univ. Coll.; G. S. Marshall, Univ. Coll.; N. V. Pandit, Bombay and King's Coll.; Ruth E. Proctor, Aberdeen and King's Coll.; Mildred A. Thynne, R. Free and Univ. Coll.; H. Toms, Oxford and St. Bart's.; and H. E. Variava, Bombay and Univ. Coll.

A report was read from the Secretary to the Conjoint Examining Board respecting candidates found qualified for the Diploma in Tropical Medicine and Hygiene of the two Colleges, and diplomas were granted jointly with the Royal College of Physicians to the following candidates:—

R. W. Cilento, C. Clyne, G. C. Dunham, J. J. B. Edmond, M. A. M. el-Kattan, B. Gale, G. Giglioli, W. H. Grace, Mary L. Griffiths, J. M. R. Hennessy, H. S. Hingston, H. C. V. Joy, J. B. Kirk, R. B. Lal, D. R. Mehta, E. A. Mills, M. S. H. Mody, D. G. F. Moore, G. G. Naoleker, A. Noble, W. H. Peacock, A. R. Razik, C. A. Wood, and T. G. Wynne.

The President reported that he had arranged to receive the members of the Third International Congress of the History of Medicine at the College on Wednesday, July 19th next, from 3 to 5.30 P.M.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates, having passed the requisite examinations, have received the Higher Dental Diploma: Norbert Ryland-Whitaker, Robert C. S. Dow, George H. Webb, and George Parker.

COMMITTEE OF ENQUIRY ON VENEREAL DISEASE.—The first meeting was held on May 18th at the Ministry of Health, Lord Trevethin presiding. Dr. Morna Rawlins and Wing-Commander Martin Flack have been added to the committee.

MEDICAL WOMEN'S FEDERATION.—The Council of the Federation held its half-yearly meeting on May 8th and 9th at 9, Clifford-street, with Lady Barrett, the newly-elected President, in the chair. Reports from the various subcommittees of the Federation and from representatives on outside bodies were received and discussed. Among the former the most interesting were the reports from the subcommittee on venereal diseases, which evoked a long discussion, and that from the subcommittee on international relations, which brought forward a scheme for an international organisation of medical women on representative lines. This subcommittee was appointed about a year ago in consequence of the great development of international health bodies, whether in connexion with the League of Nations or otherwise. The scheme was approved by the Council, and will be brought before a conference of delegates from various countries to be held next September at Geneva under the auspices of the American International Association of Medical Women.

Reports from representatives of the Federation on outside bodies included those from six committees of the British Medical Association, the National Council for Combating Venereal Diseases, and the College of Preceptors' subcommittee on Physical Education of Girls. In connexion with the report from the representative on the B.M.A. Insurance Acts Committee the following motion was passed: "The Council of the Medical Women's Federation is of opinion that the National Insurance Acts Committee should be strongly supported in their efforts to prevent the approved societies gaining control of the medical officers of the Insurance Acts."

The Council also had under consideration several fresh cases of inequality of pay, or of status, between men and women doing the same work. This inequality still persists in the Post Office in spite of repeated representations both from the Federation and the B.M.A., and the Postmaster-General has refused to receive a deputation on the subject. It was decided to make every effort to redress these inequalities and to uphold vigorously the principle of "equal pay for equal work"; also to continue energetically the campaign which has been carried on by a standing committee of the Council against the dismissal, or the ineligibility for public appointments, of married medical women on the grounds of marriage solely.

A letter was received from the Secretariat of the League of Nations asking for the nomination of a medical woman for consideration as a member of the League of Nations Health Committee. This request was complied with.

ROYAL NORTHERN HOSPITAL, HOLLOWAY, N.—A Fête and Fancy Fair in aid of the funds of the hospital was held in "Arcadia," Church End, Finchley, on Saturday last. The opening ceremony was performed by Lady Barrington, and the entertainment included selections by the band of the Coldstream Guards, thé dansant, a country fair, and other attractions. The organisers of the fête are to be congratulated on their successful efforts to interest the charitable public in the work of the hospital.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.—The third International Congress will be held at the Royal Society of Medicine, London, from July 17th to 22nd, under the presidency of Dr. Charles Singer. The congress will be opened by the Minister of Health; there will be receptions by Sir Norman Moore at the Royal College of Physicians, the President of the Congress, and Mrs. Singer at the Royal Society of Medicine, the Lord Mayor and Lady Mayoress of London at the Mansion House, Sir James Purves Stewart and Lady Stewart at 94, Harley-street, the President of the Royal College of Surgeons of England at the College, Lincoln's Inn-fields, and Mr. and Mrs. H. J. Waring at 37, Wimpole-street, W. 1.

LITERARY INTELLIGENCE.—Mr. Henry Kimpton announces the forthcoming publication of the following works: "A Manual of Clinical Laboratory Methods," by Dr. Clyde Lottridge Cummer; "Management of the Sick Infant," by Drs. Langley Porter and William E. Carter; "The Place of Version in Obstetrics," by Dr. Irving W. Potter; "Clinical Tuberculosis" (2 vols.), by Dr. Francis M. Pottenger; "Radium Therapy," by Dr. Frank E. Simpson; "General Pathology and Principles of Medicine," by Dr. V. C. Rowland; "History of Dentistry," by Mr. J. A. Taylor.—Mr. Humphrey Milford announces the following forthcoming books from the Oxford University Press: "Western Races and the World" (Unity Series), edited by Mr. F. S. Marvin; "The Evolution of Kinship: An African Study" (The Frazer Lecture for 1922), by Mr. E. Sidney Hartland.—Messrs. W. and G. Foyle, Ltd., announce that they have rearranged and improved their department devoted to second-hand and new books on medical, surgical, dental, and nursing subjects. Readers of THE LANCET are invited to call and look round the reorganised department, or to write for a catalogue mentioning requirements.

CARDIFF MEDICAL SOCIETY.—A meeting was held on May 9th, Dr. F. Buckham in the chair. Dr. D. R. Paterson gave an account of the History of Medical Endoscopy from the earliest times to the end of the eighteenth century. He dealt more particularly with the examination of the nose, mouth, and ear cavities, the uterus and rectum. He traced the beginnings of endoscopic methods in Greek medicine and pointed out their relatively high development in Roman times as evidenced by the finished instruments found in Pompeii. The address was illustrated by lantern-slides.—Dr. R. E. Mortimer Wheeler, Keeper of Archæology, National Museum of Wales, demonstrated portions of a skull found in a Bronze-Age burial some 12 miles north of Cardiff. The remains belonged to a child (probably a boy) about 3 years old with cranial measurements typically brachicephalic. Sir Arthur Keith and Prof. S. G. Shattock, who have examined the fragments, are of opinion that the bosses seen on the forehead and on the hinder part of the skull are the result of two attacks of rickets, one occurring when the child was about six months of age, a second about six months later, as evidenced by the condition seen in the unerupted lateral incisor, which shows two sets of grooves of constrictions corresponding to the periods of the attacks. This

skull appears to be the earliest trace of rickets yet found, the date generally accepted for the type of pottery accompanying the skull being between 2000 and 1500 B.C. In reply to questions raised by Prof. E. Emrys-Roberts regarding the pre-disposing factors, having special reference to the recent evidence from India pointing to the importance of the deprivation of sunlight and fresh air resulting from the purdah system, Dr. Wheeler briefly described the mode of life of the Bronze-Age inhabitants of Britain, saying that the huts were both dark and insanitary, and that, at the site of the find, the climatic conditions had been probably such as to necessitate the spending of much time under shelter.

THE LATE MR. W. D. SPANTON.—William Dunnett Spanton, F.R.C.S. Eng. & Edin., died at his residence at Hastings on May 13th. Mr. Spanton, who had retired from practice, was in his eighty-second year.

TUBERCULOSIS SOCIETY.—A meeting will be held at the Margaret-street Hospital, Margaret-street, London, W. 1, on May 22nd, at 7.30 P.M., when a discussion of the therapeutics of tuberculosis as carried out in a tuberculosis dispensary will take place.

HOLIDAY TOURS.—George Lunn's Tours, Ltd., again issue an attractive programme of tours which bears witness to the improvement of facilities in connexion with Continental travel. A special feature of this year's collection is a flying tour to Lake Geneva. A week in Paris, a week in Lucerne, and motor tours in the Bernese Oberland are also detailed in a descriptive booklet which may be obtained from the company's office at 176, Fleet-street, London, E.C. 4.

A JOURNAL OF SCIENTIFIC INSTRUMENTS.—The Institute of Physics has under consideration the publication of a journal dealing with methods of measurement and the construction and use of instruments. In Germany four or five journals cover this field; one of them, entirely devoted to the subject of scientific instruments, has been of great influence in imparting a sense of the importance of scientific methods in the study of technical and industrial problems. Incidentally it has been largely instrumental in fostering the scientific instrument trade of the country. Research workers and manufacturers in Great Britain have long felt the need of such a journal, for although descriptions of instruments and methods of measurement are published in the specialised journals and in the transactions of learned societies, emphasis is not, as a rule, laid on the construction of instruments; detailed drawings are not generally reproduced, nor are new applications of an instrument or method suggested. Physical measurement is the basis of all exact scientific and industrial work, and a journal of the proposed scope will not only assist the research worker in physics, chemistry, engineering, biology, and medicine, but also the manufacturers of scientific instruments. The journal will be managed by a committee appointed by the Institute of Physics on which the Department of Scientific and Industrial Research and the National Physical Laboratory will be represented; the editorial work will be carried out at the National Physical Laboratory, assisted by a scientific advisory committee appointed by the Institute of Physics. It will probably consist of 32 pages and will be published monthly at 2*s.* 6*d.* per issue. The Institute can only be responsible for the journal if its financial position is secured; anyone desirous of obtaining a copy of the free specimen number now issued is asked to apply to the Secretary of the Institute of Physics, 10, Essex-street, London, W.C. 2, and to enclose 6*d.* to cover postage.

MEDICAL GOLFING SOCIETY.—The summer meeting of the Medical Golfing Society will be held on Thursday, June 8th, at Stoke Poges Golf Club by the kind permission of that club. Any registered male practitioner wishing to play can become a member of the Society, without election, by forwarding the annual subscription of 10*s.* to the hon. secretary, and there will be no further entrance fee for the meeting. The programme will consist of 18 holes match play *v.* bogey, and prizes will be given as follows: THE LANCET Challenge Cup for best *scratch* return *v.* bogey; the "Henry Morris" Challenge Cup, and the Society's Gold Medal for best return under handicap, in either class. First and second prizes and a prize for the best last nine holes will be given in each class, and no player will be permitted to take the first or second prize and the prize for the last nine holes. Class I., handicaps nine and under. Class II., handicaps over nine. Handicap limit 18. Members of Stoke Poges Golf Club will deduct two from their handicaps. Cards may be handed in till 7.30 P.M. No previous play will be allowed on the day of the meeting. A foursome sweepstake *v.* bogey will be arranged in the afternoon. Intending competitors are asked to fill in a form giving name, address, name of golf club and lowest handicap, and name of proposed partner, and to indicate the convenient starting-time. The forms, which have been supplied to the Medical Golfing Society, are to be forwarded on or before June 5th to Dr. Rolf Creasy, junr., hon. secretary, 36, Weymouth-street, London, W. 1. Competitors are advised to write to the caddy master at Stoke Poges and reserve caddies. The station for Stoke Poges Golf Club is Slough (G.W.R.) and motor omnibuses meet the trains. There will be a green fee of 5*s.* for the day.

The future arrangements of the club are as follows: Society's meeting at Littlestone, Oct. 21st and 22nd, 1922 (accommodation, Grand Hotel and Dormy House). Any member of the Society, whether intending to compete in the summer meeting or not, who has not yet notified his handicap to the hon. secretary, is requested to do so as soon as possible. A dinner of the members will be held at the Grand Hotel, Trafalgar-square, London, on Thursday, Oct. 12th.

NATIONAL COUNCIL FOR COMBATING VENEREAL DISEASES.—The annual general meeting will be held at the House of the Royal Society of Medicine in the Barnes Hall, on Monday, June 19th. It is hoped that the arrangements for the incorporation of the Council will be completed in time to allow the first meeting of the incorporated body to take the place of the business meeting.

FEDERATION OF MEDICAL AND ALLIED SERVICES.—A meeting of the Medical Council of the Federation will be held at 5 P.M. on Tuesday, May 30th, at the office of the Federation, 12, Stratford-place, W., the special business to be transacted being the allocation of funds derived from paying patients at voluntary hospitals, and the attitude of the Friendly Societies with reference to the National Insurance Act.

The annual meeting of the Federation will be held on the afternoon of Wednesday, June 7th, and the annual dinner on the same evening, at the Café Royal, Regent-street, London, W., at 7.30 P.M. Sir Berkeley Moynihan, President of the Federation, will preside, and Sir Alfred Mond, the Minister of Health, Lord Islington, and Dr. Christopher Addison have signified their intention of being present.

ROYAL STATISTICAL SOCIETY.—At a meeting in the hall of the Royal Society of Arts, on May 16th, with Sir R. Henry Rew, the President, in the chair, Dr. Major Greenwood opened a discussion on the Scientific Value of Life-Tables. He submitted that the value of a life-table as an instrument of research had been somewhat over-estimated, and that the opinion that important deductions could be drawn from local life-tables which were not deducible from the death-rates at ages was mistaken. A life-table was an artificial product; its population was a fiction. It was not correct, for instance, to say that the average length of life of an English male was given by the "expectation of life" of any national table. An "expectation of life" was deduced from the rates of mortality of contemporaneously observed lives and the comparison of such constants for different life-tables was open to numerous criticisms. In the speaker's opinion, a medical officer of health would learn little more from a life-table than from death-rates at ages.

Appointments.

BLAKE, E. W., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Acle District of Norfolk.

COULTHARD, H. L., M.D., Ch.B. Glasg., D.P.H. Oxf., Assistant Medical Officer (Non-Resident), Middleton Sanatorium.

COX, W. J., M.B., Ch.B. Vict., D.P.H., Medical Officer of Health to the Urban District of Watford.

DAW, S. W., M.B., B.S. Lond., F.R.C.S. Eng., Honorary Surgeon in charge of the Orthopædic Department, Leeds General Infirmary.

HANDFIELD-JONES, R. M., M.S. Lond., F.R.C.S. Eng., Assistant Director of the Surgical Unit at St. Mary's Hospital Medical School.

SOUTHAM, A. H., M.Ch., M.B., M.A. Oxon., F.R.C.S. Eng., L.R.C.P. Lond., House Surgeon for Children to the Manchester Northern Hospital for Women and Children.

THOMSON, J. H., M.B., Ch.B. Edin., Resident Orthopædic Officer, Leeds General Infirmary.

WALKER, ENID, L.D.S. Eng., Dental Surgeon to the South London Hospital for Women.

WARHAM, T. G., M.B., B.Ch., B.A.O. Trin. Coll., Dubl., House Surgeon at the Harrogate Infirmary.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen, Royal Aberdeen Hospital for Sick Children.—Hon. Jun. P. Hon. Registrar.

Biggleswade Rural and Urban District Council.—Part-time M.O.H. £300.

Birmingham General Dispensary.—Locum Resident. 9 gs. per week.
Birmingham University.—Demonstrator of Anatomy. £300 to £400.
Buenos Aires British Hospital.—Asst. Res. M.O. £450.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Cancer Hospital, Fulham-road, S.W.—Half-time Asst. to Electrical, &c., Dept. £350.
Dundee Royal Infirmary.—Med. Supt. £1000.
Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Two H.S.'s, and Obstet. Asst. £50 each.
Greenwich, Dreadnought Hospital.—H.S. £150.
Grosvenor Hospital for Women, Chelsea.—Hon. Asst. Anæsthetist.
Hampshire County Council.—Asst. M.O.H. £626.
Hellingly, Sussex, East Sussex County Mental Hospital.—Locum Tenens Asst. M.O. 7 gs. weekly.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Pathologist.
Isle of Man Mental Hospital, Douglas.—Med. Supt. £600.
Kensington and Fulham Hospital, Earl's Court.—Res. M.O. £200.
King's College for Women, Campden Hill-road, W.—Asst. Lect. in Hygiene and Bact. £600.
Leicester Isolation Hospital and Sanatorium.—Med. Supt. £600.
Liverpool City Infectious Hospitals.—Asst. Res. M.O. £250.
Liverpool Hospital for Children, Leasowe, Cheshire.—Res. Jun. M.O. £250.
London Jewish Hospital, Stepney Green, E.—Hon. M.O. for X ray Department.
Manchester, County Asylum, Prestwich.—Asst. M.O. £484 18s. Locum Tenens, £8 8s. per week.
Manchester, Monsall Fever Hospital.—Med. Supt. £750.
Manchester, Northern Hospital for Women, &c.—Hon. Asst. P.
Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Res. S. £200.
Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsth. £120.
Nottingham General Hospital.—H.S. £200.
Rampton State Institution for Mental Defectives.—Asst. M.O. £300 to £350.
Royal Northern Hospital, Holloway, N.—H.S. £150.
Royal Westminster Ophthalmic Hospital, King William-street, Strand.—Asst. S.
St. Bartholomew's Hospital, West Smithfield, E.C.—Sen. Res. Anæsth. £150. Also Two Jun. Res. Anæsths. Each £80.
Sheffield Royal Infirmary.—H.P., Ophth. H.S., and Asst. Cas. O. Each £150.
Southport General Infirmary.—Jun. H.S. £175.
Stafford Borough.—M.O.H., &c. £700.
Sunderland Borough Mental Hospital.—Med. Supt. £1000.
University College Hospital, Gower-street, W.C.—House Anæsth. and Res. M.O. £150 each.
Wandsworth Union, St. John's Hill, S.W.—Locum Tenens Asst. M.O. One guinea per day.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. H.P. and Asst. H.S. £52.
West Riding of Yorkshire County Council.—Tuberculosis O. £750.

The Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Kilbirnie (Ayr).

Births, Marriages, and Deaths.

BIRTHS.

FRASER.—On May 8th, at Finchley, the wife of Captain Rolland Fraser, L.D.S., B.D.S. Melb., Australia, of a son.
LIVINGSTON.—On May 10th, at Castle-street, Dumfries, the wife of George R. Livingston, M.D., F.R.C.S.E., of a daughter.
PARKES.—On May 8th, at Ebury-street, S.W., the wife of Dr. Oscar Parkes, of a son.

DEATHS.

BLAKISTON.—On May 4th, at the Mental Hospital, Braddan, Isle of Man, Frederick Cairns Blakiston, aged 45, late Medical Superintendent of the above institution, formerly D.M.S. National Shipyards, Chepstow.
CARR.—On May 8th, at Shanghai, of heart failure, John Cecil Carr, M.D., Med. Supt. of the Wilson Memorial Hospital, Pingyangfu, Shansi, China.
DAVY.—On May 10th, at Southernhay House, Exeter, Sir Henry Davy, K.B.E., C.B., M.D., F.R.C.P.
FELKIN.—On May 8th, at The Warren, Ringwood, Hants, Henry George Felkin, M.D. Lond., D.P.H.
HAWKINS.—On May 12th, at North Petherton, Bridgwater, Cæsar Frederick Hawkins, M.R.C.S.
LAKE.—On May 8th, suddenly, at Brookfield House, near Mortimer, Berks, George Robert Lake, M.R.C.S., aged 77.
LOW.—On May 12th, at York Mansions, S.W., Robert Bruce Low, C.B., M.D., aged 76.
SPANTON.—On May 13th, at Ripon Lodge, Hastings, William Dunnett Spanton, F.R.C.S., aged 81.
TAYLOR.—On May 11th, at Tarves, Aberdeenshire, William Charles Taylor, M.B., Ch.B., of Broughty Ferry and late of Custom House Station, London.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 22nd.

ODONTOLOGY: at 8 P.M.
Annual General Meeting:
Election of Officers and Council.
Papers:
Mr. Evelyn Sprawson: On the Significance of the Extra Cusp commonly found on the Antero-Internal Aspect of the Maxillary First Permanent Molar in Man.
Mr. H. C. Malleson: Some Notes on Dental Histology.

Tuesday, May 23rd.

MEDICINE: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1922–23.
Papers:
M. P. L. Violle: A Practical and Accurate Method of Estimating Diuresis.
Dr. William Hunter: The Nervous Disorders of Severe Anæmias in relation to their Infective Lesions and Blood Changes.

Thursday, May 25th.

UROLOGY: at 8.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1922–23.
Papers:
Prof. Frederick Hobday: Urinary Calculi in Animals (with Specimens and Skiagraphs).
Mr. Kenneth Walker: The Accessory Sexual Glands of the Rhinoceros, Flying Wombat, Ornithorhyncus, Zebra, and Tapir.

Friday, May 26th.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Annual General Meeting:
Election of Officers and Council for 1922–23.
Cases will be shown.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Election of Officers and Council for Session 1922–23.
Paper:
Dr. R. Dudfield: Reforms Needed in the Notification of Tuberculosis.

Saturday, May 27th, and Sunday, May 28th.

BALNEOLOGY AND CLIMATOLOGY:
Annual General Meeting at Cambridge: A train leaves Liverpool-street at 10.5 A.M.
Exhibits will be shown and demonstrations given by Dr. W. H. L. Duckworth and Dr. T. S. P. Strangeways.
Full particulars may be had from the Senior Hon. Secretary, Dr. C. F. Sonntag, 80A, Belsize Park-gardens, N.W. 3.

UNIVERSITY OF LONDON ADVANCED FREE LECTURES IN MEDICINE, Royal Society of Medicine, 1, Wimpole-street, W.
MONDAY, May 22nd.—5 P.M., Prof. F. Widal: Anti-anaphylaxie.
THURSDAY.—5 P.M., Prof. H. Vaquez: De l'Erythrémie (Maladie de Vaquez-Osler). (These lectures will be delivered in French.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: May-June, 1922.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, May 22nd.—2 P.M., Dr. Hinds Howell: Outpatient Clinic. 3.30 P.M., Dr. Walshe: Clinical Types of Paraplegia.
TUESDAY, May 23rd.—2 P.M., Dr. Grainger Stewart: Outpatient Clinic. 3.30 P.M., Dr. Adie: Syringomyelia.
WEDNESDAY, May 24th.—2.15 P.M., Dr. James Taylor: Clinical Demonstration.
THURSDAY, May 25th.—2 P.M., Dr. Kinnier Wilson: Outpatient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Disseminated Sclerosis.
FRIDAY, May 26th.—2 P.M., Dr. Gordon Holmes: Outpatient Clinic. 3.30 P.M., Dr. James Collier: Aphasia.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
NEURO-PATHOLOGY.—Dr. J. Godwin Greenfield.
MONDAY, May 22nd.—12 noon, Cerebro-spinal Fluid. III. Pathology.
THURSDAY, May 25th.—12 noon, The Neuron.
ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.—Dr. Hinds Howell.
TUESDAY, May 23rd.—12 noon, Ascending and Descending Tracts.

FRIDAY, May 26th.—12 noon, Sensory Conduction in Peripheral Nerves and Spinal Cord.

WEDNESDAY, May 24th.—Demonstration by Dr. Adie on Methods of Examining Cases of Nervous Diseases, and Interpretation of Physical Signs.

An inclusive fee of £10 10s. will be charged for the whole course. Any part of the course may be taken separately at a special fee. A special arrangement can be made for those unable to attend the whole course. For details with regard to these special arrangements, application must be made to the Dean. Fees should be paid to the Secretary of the Hospital at the office on entering for the course.

C. M. HINDS HOWELL, Dean of Medical School.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES.

MONDAY, May 22nd.—4.45 P.M., at the Western General Dispensary, Marylebone-road, N.W., Dr. Bernard Myers: Clinical Diagnosis in Gastro-Intestinal Affections in Children.

WEDNESDAY.—5 P.M., at the Royal Society of Medicine, Sir StClair Thomson: The Surgical Anatomy of the Nose and Accessory Sinuses—Lantern Demonstration.

THURSDAY.—4.45 P.M., at the Western General Dispensary, Dr. Bernard Myers: Method of Treating Gastro-Intestinal Affections in Children.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, May 22nd.—5 P.M., Mr. Donald Armour: Cerebral Surgery.

TUESDAY.—5 P.M., Dr. Pernet: Late Manifestations of Congenital Syphilis.

WEDNESDAY.—4 P.M., Sir R. Armstrong-Jones: Common Forms of Mental Disease (at Claybury).

THURSDAY.—5 P.M., Dr. Beddard: Chronic Rheumatism.

FRIDAY.—5 P.M., Mr. Addison: Empyema and Suppurative Pericarditis.

SATURDAY.—10 A.M., Mr. Simmonds: Orthopædic Department.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham.

WEDNESDAY, May 24th.—4 P.M., Mr. J. E. S. Frazer: Erroneous Ideas of Structure and Function in Everyday Work.

NORTH-EAST LONDON POST-GRADUATE COURSE, Prince of Wales's General Hospital, Tottenham, N. 15.

MONDAY, May 22nd.—10.30 A.M., Mr. J. Bright Banister: Changes in Ovarian Cysts. 11.45 A.M., Dr. Browning Alexander: Asthmatic Cases. 4.30 P.M., Prof. R. Tanner Hewlett: Laboratory Findings in Diagnosis and Treatment.

TUESDAY.—10.30 A.M., Dr. L. R. Yealland: Neurasthenia. 11.45 A.M., Dr. J. H. Evans: Swellings in the Neck. 4.30 P.M., Dr. A. J. Whiting: Heart Failure.

WEDNESDAY.—10.30 A.M., Mr. E. Gillespie: Orthopædic Methods in Paralytic Deformity (1). 11.45 A.M., Mr. C. H. Hayton: Methods of Ear Examination. 4.30 P.M., Mr. J. B. Banister: Inflammation of the Female Pelvic Organs.

THURSDAY.—10.30 A.M., Dr. S. C. Shanks: The Opaque Meal in Examination of the Alimentary Canal. 11.45 A.M., Mr. H. W. Carson: Intestinal Stasis. 4.30 P.M., Dr. J. Metcalfe: Radiological Examination of the Heart, &c.

FRIDAY.—10.30 A.M., Mr. Gillespie: Orthopædic Methods (2). 11.45 A.M., Dr. C. F. Hadfield: Spinal Anæsthesia.

SATURDAY.—11 A.M., at the North-Eastern Hospital, St. Ann's road, N., Dr. Frederic Thomson: Early Diagnosis of Infectious Fevers.

Daily, 2 P.M. to 4 P.M., In-patients, Out-patients, Special Departments, and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.

MONDAY, May 22nd.—5.30 P.M., Dr. B. T. Parsons-Smith: Aneurysm of the Thoracic Aorta.

Daily, 10 A.M. and 2 P.M., Visits to In-patients and Out-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, May 25th.—4 P.M., Mr. Fairbank: Flat-Foot.

LONDON LOCK HOSPITAL, 91, Dean-street, W. 1.

MONDAY, May 22nd.—5 P.M., Mr. Charles Gibbs: Ante-Natal and Post-Natal Treatment of Syphilis.

TUESDAY.—2.30 P.M., Mr. J. E. R. McDonagh: Clinical Demonstration with Exhibition of Paintings.

THURSDAY.—2.30 P.M., Mr. W. Victor Corbett: Interpretations of the Wassermann Reaction. 4.30 P.M., Mr. Swift Joly: Some Complications of Gonorrhœa in the Male.

FRIDAY.—4 P.M., Mr. Johnston Abraham: Syphilis in Women.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.

THURSDAY, May 25th.—5 P.M., Prof. E. H. Starling: Some New Experiments on the Kidney.

LONDON HOSPITAL MEDICAL COLLEGE, Mile End, E. Lectures on Advanced Surgery in the Clinical Theatre.

FRIDAY, May 26th.—4.15 P.M., Sir Hugh Rigby: Carcinoma of the Rectum.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

THURSDAY, May 25th.—4.30 P.M., Mr. A. C. Magian: Cæsarean Section.

Notes, Short Comments, and Answers to Correspondents.

A PLEA FOR THE DEAF CHILD.*

BY MACLEOD YEARSLEY, F.R.C.S. ENG.,
CONSULTING AURAL SURGEON TO THE LONDON COUNTY COUNCIL AND TO ST. JAMES'S HOSPITAL, BALHAM.

I HAVE used the title "A Plea for the Deaf Child" because I wish to address myself to a wider audience than one composed almost entirely of those who work among deaf children; teachers of the deaf are fully alive to the numerous problems of their work, and gratefully welcome mutually advantageous help from outside sources. I have been, for nearly 15 years, in almost daily contact with deaf children as a specialist in charge of schools devoted to their education, and for some 25 years have also been specially interested, as a hospital surgeon, in the causation and prevention of deafness in children, and in the education of those afflicted in this manner; thus I may claim some knowledge of the subject.

Position of the Deaf Child from an Educational Standpoint.

The ignorance of the majority of people concerning the methods by which the deaf are taught is astonishing, and members of my own profession are not altogether exempt from it. The deaf child is not seldom regarded as not far removed from the mentally defective, but the disability is primarily physical. Indeed, I once heard an official in a responsible position give it as his serious opinion that all deaf children should be put in a lethal chamber. To begin with a clear definition, I will quote that given by Dr. Kerr Love in his introduction to Miss Martin's excellent pamphlet "What the Mother of the Deaf Child Can Do"—a pamphlet which ought to be in the hands of every teacher, doctor, or layman interested in education. "Almost all deaf children," says Dr. Kerr Love, "are mentally sound, and this is especially true of deaf-born children. You are to look on your child as exactly the same as a hearing child, except that he is deaf." That is precisely the fact: the deaf child is merely a normal child who has lost his most important educational sense. Whether he has been born without it, or has lost it by disease after birth and before speech is acquired, does not matter. He shows no more tendency to mental defect than do hearing children; he possesses an equal right to the best education we can give him, and an additional right to have every facility accorded to him to replace the sense-channel closed to him. By hearing the child obtains the faculty of speech, and thereby the language without which he cannot reason clearly. I say this because, although he may reach to reason by means of signs and written words, such means can never place him upon the same plane as can speech. The acquisition of speech may be called the physiological education of the child. It is, indeed, a physiological process. In the normal child, in full possession of all his senses, this physiological education begins practically in the cradle. By means of his hearing he is storing up sensory impressions of speech during every minute of his waking life, and without these the motor mechanisms which produce speech cannot be developed. My little boy, who will not be 4 years old until next month, can listen to, understand, and profit by what is told him, ask questions about not only everything he sees but many things he thinks about, and hold quite interesting conversations with one. The deaf child who has reached the same age can do none of these things and can have but a very hazy conception of his surroundings. In a word, his mind remains practically undeveloped, and without assistance by teaching his mind at 5 years will be little different from that of a child of 2. The whole object of the modern education of the deaf is to enable such a child to take his place for the battle of life in the ranks of his hearing fellows. He must not be allowed to become, as it were, one of a race apart. He has to be taught upon a very special plan if he is to attain speech and acquire language. It must be remembered that he holds within him certain vague hereditary tendencies to speech, the legacy of millions of speaking ancestors. And I may mention here that Professor Elliot Smith, speaking at the British Association Meeting at Dundee in 1912, gave it as his opinion that the human brain must have reached almost its full development, and that speech was probably in full process of evolution, before the jawbone, tongue, and other parts which subserve the purposes of

* An abstract of an address delivered before the Child Study Society of London on April 6th, 1922.

speech had become finally and fully adapted to their new functions. With this opinion Sir Arthur Keith agrees. This being so, speech must have been well developed in early Palæolithic times. I will not trouble you with any computation of the length of time that was ago. These vague hereditary tendencies to speech ought to be satisfied in the deaf child as early as possible, while the larynx and the organs of articulation are still plastic. Moreover, not only are there hereditary tendencies to speak, but also to develop the general faculties *through* and *by* speech. To the physiological education, with its constant reiteration and the consequent deep cutting of the paths of nerve stimuli which this entails, we owe the fact that speech soon becomes automatic with us; only by beginning to educate the deaf child as early as possible can we hope to attain any semblance of this automatism in his speech.

Necessity of Specialised Teaching.

The deaf child requires very highly specialised teaching, involving enormous patience. I would like to quote here the words of Dr. John Kerr in "Memories Grave and Gay." Dr. Kerr, who was for over 36 years an inspector of schools in Scotland, says: "There are two classes of teachers with whom I have often come into contact, and for whom I have great respect, the teachers of blind and deaf-mute children. They have in quite an exceptional degree (what all teachers who are to produce the best results must have) untiring patience and sympathy with their pupils' difficulties. I do not recollect having met any teacher of the deaf or blind who was not a model of sympathetic patience. This remark is almost unnecessary, inasmuch as their possession of these qualities might be inferred from their having chosen this kind of teaching as their life work. They may have thought that it would be interesting, but they must have seen that it would be exceedingly difficult. This applies with greater force to the teacher of the deaf than to the teacher of the blind." Dr. John Kerr, comparing the disabilities of the blind with those of the deaf child, expresses the opinion of all who have studied the subject practically when he insists that the deaf child is by far the more to be pitied.

From Dr. Kerr's tribute—a tribute which has my hearty concurrence—it will be gathered that teachers of the deaf are worthy of every help; the results they obtain in their work are among the very best that can be shown by any branch of education. Yet they are frequently greatly handicapped because they do not get hold of their pupils early enough. Just consider the matter for one moment. The hearing child goes to school at 5, with his physiological education well under way, if not already completed. The blind child enters his special school at the same age, and in practically the same condition, save that he lacks those general impressions which come to him through his sense of vision. Do not think that I wish in any way to minimise the disadvantages of the blind child. But the deaf child of the same age is far away behind the hearing child, blind or normal; he has been denied that physiological education which his fellows have enjoyed throughout their short lives. Surely that is handicap enough for the teacher of the deaf to begin with.

Deaf Education in England and Scotland: A Contrast.

But English law lays down that the deaf child need not attend school until he is 7 years old, thereby adding another two years to his already severe handicap. Things are managed much better in Scotland. Dr. Kerr Love has set down for me the most important points of difference between the English and the Scottish law regarding the education of the deaf. In a letter, from which I shall have occasion to make several quotations, he says: "In Scotland deaf children *must* attend school from 5 years upwards." If we acted logically and in accordance with the facts, the deaf child's education would begin at 3 years of age at least. Hitherto, the authorities have allowed special schools to take deaf children at 5, provided the parents permitted them to go, and have paid grants for them. If parents would send children even earlier, and vacancies existed, they could do so, although in those cases no grants were paid. I know of several cases in which children have attended school at 2½ or 3 years, with the result that, when they had reached the age of 5 they were well in advance of the children of 7. That is to say, they had already begun to profit by the physiological education they needed. In fact, the deaf child of from 2 to 3 is at his most nearly normal period.

Threatened False Economy.

But there are rumours abroad that soon the age prescribed by law—that is, 7 years—is to be rigidly adhered to; they are at present only rumours, but the change is foreshadowed by an ominous circular recently issued by the Board of Education, and addressed to local authorities, warning the latter that in view of the present financial position they may have to restrict their total expenditure on blind, deaf, and defective children in 1922-23 to the amount incurred in 1921-22. The Board further points out that this warning is given "without prejudice and must not be taken as implying that even further reductions in expenditure may not be found necessary." If the rumours materialise, a blow will be struck at the very root of deaf education which will seriously imperil its efficiency, and this will be a crying shame and disgrace.

Turning again to Dr. Kerr Love's letter, we see how Glasgow has tackled this question in its efforts towards making deaf education more successful. "Ten years ago," he says, "at my suggestion the Glasgow authority started an infant school, one function of which is and was to teach in the homes of little deaf children. Homes were found to be so bad in many cases that it was found better to bring the children to school in a school motor, and to encourage the mothers to visit the school and see methods. This plan works well, and the later history of these children is much better than when the children do not come to school till 6, or even 5 years of age. The plan was brought before Sir John Struthers when he was in Glasgow. He was struck by the idea and found money for it. I have not the date, but it occurs in the minutes of the authority as my scheme."

In a recent letter to THE LANCET,[1] Dr. Kerr Love says: "Deaf children are now taken into the Scottish schools and institutions at the age of 5 and into the schools of the Glasgow educational authority at the age of 3. Why should an English child be handicapped by having to wait until he is 7 years old? One may argue quite fairly that a hearing child from a decent home may delay his entrance to school by a year and find himself at 14 or 16 years not a bit behind, because during the year at home his education has been progressing and his mind developing, but the deaf child's mind does not begin to develop until he enters school."

In London we have no such scheme as that mentioned by Dr. Kerr Love. Our results are already good, even in the face of present obstacles, but they could be much better. A suggestion of such a scheme, if sent up to the Board of Education, would probably be carefully pigeon-holed for the future edification of Macaulay's intelligent New Zealander. There is no reason why there should not be an infant class in every deaf school for pupils of from 2½ to 5 years. Plenty of bright, intelligent, deaf children are now let loose to play in the streets, there wasting the precious early years that should be devoted to giving them the physiological preparation for later education that the hearing child gets without outside help. These children want finding out. The inspector of blind and deaf schools does his best, but in many cases it is only when parents of young deaf children apply to the education authorities that one gets to know of them; and there are parents who are actually proud of their deaf families. Some deaf children get taken to hospitals, but are seldom passed on. Two London hospitals, however, refer deaf children to the London County Council: I know this, because all these children pass through my hands. Here, again, Glasgow is ahead of us, for Miss Martin, in the admirable pamphlet I have already mentioned, points out that many mothers are beyond the reach of nursery schools or visiting teachers, and are left to face the problem of the young deaf child alone. In the first place, it would be helpful for them to realise that, in attempting to teach their own little ones at home, they are not alone. To quote Miss Martin's own words: "Many mothers have undertaken it, and have succeeded. The home life is specially adapted for early training, and, as I write, I can picture many children who will owe much of their future success to the efforts of their parents in those early years between the ages of 2½ to 5. In some cases mothers have been deterred from undertaking this work, by the fear of attempting to do something beyond their capacity. Let no such fear hinder you. You will not be asked to exercise any special intellectual powers, but you will most certainly be required to think carefully, and you will have to use great patience, tact, and perseverance."

The appearance of this pamphlet of Miss Martin last year was the signal for another step forward by the Glasgow authority. Dr. Kerr Love says in his letter: "Now Miss Martin's paper is to be given to all mothers of little deaf children and the authority is going to support this. The authority will give the hospitals supplies of the paper to be used by dispensary surgeons on the discovery of a deaf child. Deaf children are discovered by the attendance officers, who make a census of all children approaching school age. They are also referred by dispensary surgeons. With all precautions some escape, but on the whole the deaf child in Glasgow is tackled at an early age. Miss Martin's paper should be put into the hands of all dispensary surgeons in the kingdom, and the National College of Teachers of the Deaf and our Glasgow Deaf Children's Society will probably do this. The mother and the teacher must tackle the young deaf child *together*."

Of course, in this quotation Dr. Kerr Love is referring to the kingdom of Scotland. The scheme should be extended to the kingdom of England as well. I cannot see why

[1] THE LANCET, 1922, i., 403.

the example of our northern friends should not be followed down here. A combination of infant classes in our deaf schools, with free distribution of Miss Martin's pamphlet to all mothers of deaf children and to all hospital authorities, would yield most valuable results.

Children Becoming Deaf After Infancy.

Hitherto I have been dealing with the child who is born deaf or has lost his hearing before the age of 2—that is, before the acquisition of speech has well begun. But many others become deaf at a later age, from various causes, most of which are preventable. It is of the highest importance that these children should commence their special education as soon as they are discovered and their deafness known to be incurable. Many of them are of pre-school age. As soon as they become deaf, they rapidly lose such speech as they may have already developed. The teacher must step in to preserve speech, to foster what is left, to correct and add to it; for once gone, it is difficult to recall. When this happens during the pre-school period, the child comes within the same category as the young deaf child of whom I have been speaking, and there may be the same difficulties in discovering him. When it occurs in the early years of school life, he ought to be more easily reached. Experience, however, shows that this is by no means the rule. The young deaf child gets into the back rows of the often unwieldy classes of the elementary school and is neglected, allowed to go his own way. I have known more than one case sent off to a mentally defective school. Such things should not occur. I have proposed a simple hearing test of all young children in school to be carried out by the teacher when the ordinary vision test is made, but have been told that it is not practicable, and would take up too much time. For the life of me, I cannot follow the reasoning. As if time were worth considering when we are dealing with a deaf child's, or any child's, future! When a child is tested by the teacher with a vision card, surely it would be perfectly easy to put the questions in a whisper from behind the child's back; this would hardly involve any waste of time, and the whisper is the most practical test of any. In Chicago, the child suspected of deafness is placed in the back row, and during a lesson he is called by name, the result being noted for every child in time. In France, the detection of deaf cases in the hearing infant classes is made the occasion for a game, in which the little ones are told to come forward from time to time, and those who fail to respond are noted and dealt with. Neither of these methods "waste time," and I am informed that they yield excellent results.

The Partially Deaf.

The same trouble arises in connexion with children partially deaf who lose an enormous amount in the ordinary hearing class, even when placed in the front rows. Some years ago I suggested the establishment in London of special hard-of-hearing classes or centres, and my suggestion was taken up, the class at Ackmar-road, Fulham, being the first one opened as an experiment. The success was immediate, and there are now five of them in full working order in various parts of London. At least two more are required. I am pleased to say that they have been imitated in the United States, but there are, as yet, none in Glasgow, so that London has scored one point against that city in the friendly game of progress in deaf education. In these hard-of-hearing centres the children pass one-third of their time under a certificated teacher of the deaf, who instructs them in lip-reading, and the remaining two-thirds at lessons in the hearing classes of the school to which the centre is attached. They thus obtain practice in lip-reading and learn to combine it with what remains to them of hearing. Intelligent pupils make such progress that many of them can be returned to their own elementary schools after six or twelve months in the centre. To realise the value of these centres one has only to watch these hard-of-hearing children and to see the way they change from the listless inattention of the child who has given up trying because he cannot hear to the alert, eager, happy youngster who has discovered a new channel of instruction through his eyes. Formerly these hard-of-hearing children had to be sent to deaf schools for the whole of their school life, and the education of the deaf is a costly matter. Hard-of-hearing centres reduce this heavy cost, a fact which should appeal strongly to the public.

Prevention of Acquired Deafness.

Too many parents neglect the early manifestations of deafness in their offspring and do not rouse themselves to action until it is too late. Some believe that the little victim will "grow out of it," others will tell you that "all our family got deaf about the same time," and this attitude is by no means confined to the lower classes of society; it is not seldom fostered by doctors who hide their want of knowledge by assuring parents that their child *will be all right at the age of 7 years*; whether this curious and pernicious superstition responsible for the absurdity of our law I do not know. By timely interference a heavy percentage of the acquired deafness of children could be prevented. I might quote numerous writers upon this point, but will content myself with the clear summary of Tomlinson in the *New York Medical Record*. According to him, 80 to 90 per cent. of all cases of acquired deafness in children are referable to disease of the middle ear; in 90 per cent. of these the condition is due to extension of inflammation from the post-nasal space, and the most frequent cause of this inflammation is adenoids. A systematic examination of adenoid cases shows that three-quarters of them have some ear affection, and, lastly, the routine examination of the ear in children with adenoids confirms the belief that many of the cases of middle-ear deafness in early adult life originated in childhood in this manner. My own experience fully confirms this. Here is an additional and far-reaching reason for detecting deafness among school children as early as possible. Plenty of work is being done upon the subject of prevention and stores of knowledge are being accumulated; what is now wanted is the spread of this knowledge.

The Danger of the Charlatan.

Sufferers from deafness, as I recently pointed out,[1] are always on the look-out for some heaven-sent miracle which will restore to them the sense they lack, always eager to kneel, sublimely credulous, at the feet of anyone who professes to have discovered a short and easy road to the renewal of hearing. The persons who assert, often in a jargon of glib pseudo-science, this ability to restore hearing, will continue to batten upon human infirmity and credulity so long as the press will publish their advertisements. The second paragraph of Dr. Kerr Love's introduction to Miss Martin's pamphlet runs thus: "If your child has been born deaf, or if illness has caused deafness and loss of speech, his hearing will never return. The exceptions to this statement are so few that they are not worth considering in thinking of the future of your child. Especially must you refuse to listen to anyone—be he doctor or layman—who says that at 7 years your child may become all right. Whatever virtue there may be in the number seven it has none here, nor has any other number." The few exceptions referred to by Dr. Kerr Love are those of hysterical or functional deafness, an extremely rare condition. I have never seen a case, and in searching the literature have only found one instance in a little girl of 8, reported in 1911 by Arnold Jones in the *British Journal of Children's Diseases*. But every day I see children, originally believed to be totally deaf, develop a certain amount of hearing as education progresses, which is quite another matter. It is uncommon to find any person, child or adult, absolutely deaf—that is, without any trace of hearing whatever. By careful tests one can usually find a small island or islands of hearing somewhere in the scale, but unless these occur within the range of human voice sounds, they are useless and may be disregarded. In teaching the deaf, some degree of vowel hearing at least is the only hearing of any real value. This "residual hearing" in the deaf child is brought out by education; it is thus neither new nor restored, but *developed*, having been present all the time, but unrecognised and unused. The children in whom it occurs had no conception of the meaning of the sounds they heard, no means of asking what they meant. Their hearing, too small in amount to be of use in their physiological education, remained, so to speak, *latent*, until the gradual acquisition of language by education under the oral system brought appreciation of it to its possessor. Once education is begun and the child is watched and tested repeatedly, some slight hearing—anything from mere perception of sound to complete vowel hearing—will gradually unfold as teaching progresses. Of course, a great deal depends upon individual intelligence; it is no uncommon thing to see a smart child making every use of small residual hearing side by side with a dull one who has four times as much but does not, apparently, know what to do with it.

What is so deplorable about the schemes which are brought forward from time to time for "re-educating hearing" is that each one leaves behind it a long trail of disappointed deaf adults, deaf children whose education upon legitimate lines has been neglected for the prosecution of vain experiment, and disillusioned parents who have bought experience. In practically every case the promoter of the scheme is completely ignorant of the psychology of the deaf child, of the method (proved by long and practical experience) of his teaching, and of the uses of residual hearing. It is disastrous to any deaf child, however intelligent, to be taken away from school for experiment under any scheme, however pretty it may look on paper, which does not include the maintenance of modern methods of teaching the deaf. Unless the oral system, that is to say the teaching of lip-reading, is kept up, the child will be not only retarded in his education but will inevitably deteriorate; this opinion will be endorsed by any teacher of the deaf.

[1] THE LANCET, 1921, ii., 1129.

THE NEW STANDARD ENGLISH CATHETER GAUGE.

To the Editor of THE LANCET.

SIR,—Recently the Association of Surgical Instrument Manufacturers[1] have decided to standardise the measurements of catheters and bougies. It is a pity they did not invite a surgeon, familiar with the practical use of these instruments, to assist them. They have moved in the right direction, but the result of their work does not seem perfection.

I suggest the sizes should rise in ½ mm., that No. 1 should be 0·5 mm., No. 2 1 mm., No. 3 1·5 mm., No. 4 2 mm., &c.; the whole number in measurement should correspond to an even number of the catheter. It would only be necessary to divide the number of the catheter by two and we should have the size of the catheter in millimetres.

I am, Sir, yours faithfully,

LEONARD MYER, F.R.C.S.,
Hon. Surgeon to Out-Patients, St. Paul's Hospital
May 16th, 1922. for Skin and Genito-Urinary Diseases.

REDUCTION OF TELEPHONE CHARGES.

THE reductions in telephone charges will take effect from July 1st. The installation rental, which is payable in advance, will be charged at the reduced rates, and the local and trunk call fees, which are payable in arrear, at the present rates.

The principal alterations are :—

(1) The installation rental for a connexion to a residence where no business of any kind is carried on will be reduced by 30*s.* a year, but we are informed that "business" includes professional work. In the case of 2-party lines, the charge will be £4 10*s.* for a residence connexion, and £6 for a business connexion. (2) The extra mileage charge will be reduced from £1 5*s.* to £1 per furlong. (3) The charge for a local call will be reduced from 1½*d.* to 1¼*d.*, and that for a call over a distance between 5 and 7½ miles will be reduced from 3*d.* to 2½d. (4) Certain shorter distance trunk calls will cost less, and in future the local fee will not be charged on any trunk calls. (5) Trunk calls made between 2 P.M. and 7 P.M. will cost approximately 25 per cent. less than the present charges. Calls made between 7 P.M. and 7 A.M. will, as at present, be charged in most cases at half the full rates.

Considerable concessions have been made with regard to the terms on which new exchanges will be opened in rural areas.

REVISED WEIGHT CHARTS FOR MALE AND FEMALE BABIES.[2]

THESE well-printed and strongly-mounted charts bear the hall-mark of the Galton Laboratory; that is to say, they have been prepared from many thousands of cases and can be accepted as statistics of the utmost reliability. Two sets of curves are plotted on the charts, first a series of comparative weight curves which show at a glance how the weight of any given baby compares with that of all babies of the same age—i.e., what percentage of babies is heavier than the given one—and secondly, there is another series of curves which tells the "probable percentage of babies healthier than the given baby when it shall have completed its first year." The criterion of "health" adopted for the compilation of these statistics appears to have been the probability of survival, and whilst recognising that for the collection of figures in such numbers as are necessary for the preparation of these charts only the elemental data can be examined, we feel that the word "health" has been an unfortunate one in the present instance. The ordinary observer—and by this we mean the unqualified welfare-worker as well as the parent—will tend to draw from these charts the conclusion that the heavier a baby is at any age the healthier it will be. Any physician who has had experience of the ill-effects of over-feeding with carbohydrates will probably deny this. Weight in the very young infant is the measure of growth, and is probably the surest single guide as to the progress of the baby; but before the end of even the first year an ill-balanced diet may lead to the development of an obesity which, without endangering life, may entail physical consequences universally judged to be unhealthy.

With this reservation, we can heartily commend these charts to all physicians interested in infant welfare, for such accurate figures are far to seek, though the wisdom of placing them in the hands of parents, whose anxieties for their children's future are usually sufficiently exaggerated, may be open to question.

[1] THE LANCET, May 6th, p. 927.
[2] Issued by the Galton Laboratory for National Eugenics. London: Cambridge University Press. 1922. 7*s.* 6*d.* the pair.

A LEAFLET ON CANCER FOR THE PUBLIC.

A LEAFLET has been issued by Dr. C. Killick Millard, M.O.H. for Leicester, emphasising the importance of immediate resort to medical advice on the occurrence of any symptoms suggestive of cancer. The leaflet is worded with discretion, and is calculated to cheer and encourage rather than to frighten the reader. After a preliminary statement that cancer, in its early and curable stage, may give rise to no pain or feeling of ill-health, the most common early signs of cancer in the breast, uterus, lip, tongue, rectum, and skin are indicated. The pamphlet is designed for distribution at the town hall and by health visitors.

PUBLIC HEALTH AT LAHORE, 1918–20.

THE population of Lahore, according to the Census of 1911, was 210,271, and on this basis have been made the calculations for the three years 1918–20; but Dr. A. B. Arora, the health officer, who forwards the report,[1] states that it is really a survey of the vital statistics of the town during the decade 1911–20. The general birth-rates were 36·5, 41·6, and 39·2; and the death-rates, 62·7, 34·2, and 34·2 in the three years mentioned; the infantile mortality was 365·9, 227·1, and 253·3 per 1000 births; the death-rate of 62·7 in 1918 was higher than any previously registered. The birth-rate in this year showed great variation in the different wards of the town. In Wards VII*b.* and IX. it was only 17·3 and 18·5 respectively; in VII*a.* and IV. it was 65·7 and 76·1; during 1919 in Ward V*b.* it was only 15·9, in VII*a.* it was 80·5; in 1920 it was 23·5 in Ward IX. and 66·5 in VII*a.* In the civil station, with a population of 30,448, the ratios for the three years were 31·3, 38·7, and 34·7 respectively. The general death-rate was 62·7, 34·2, and 34·2 in the three years; for Europeans the ratios were 10·5, 8·7, and 11·2. The highest ratio in the town was that of 117·4 in Ward VII*a.*, where the density of population was 450·1 per acre; but in Ward V*b.*, where the density is 500 per acre, the mortality was only 54·9 in that year. Referring to Ward VII*a.*, Dr. Arora alludes to the insanitary conditions prevalent, and the increase in death-rate during recent years. "No wonder that year after year the records reveal the recurring gloomy spectacle of high mortality, for all the factors that go to swell up death-rates are present here in typical conditions." That this should be the case in the chief city and seat of government of the province seems to need explanation. The infantile mortality ratios were 365·9, 227·1, and 253·3 per 1000 births in the three years respectively; in London the corresponding ratio was 152 in the decennium 1877–86, and 108 in 1918. The mortality at Lahore was, however, lower than any recorded during the last ten years. Dr. Arora makes several excellent recommendations for sanitary improvement in various directions, especially regarding the conservancy arrangements, public latrines, the provision of public urinals, &c.; also that "medical inspection of school children should be carried out seriously and thoroughly, and a whole-time man appointed for the purpose."

R. M. F. (Belfast).—Sir D'Arcy Power, in his Notes on the Bibliography of Three Sixteenth-Century English Books Connected with London Hospitals (The Library Series 4, Vol. II., No. 2, September, 1921), enumerates 11 editions of Vicary's Anatomy of Man, published between 1548 and 1888. In this paper he discusses the value of the work both in its antiquarian and bibliographical aspects. The intrinsic value of the book varies with its edition and its state from a few shillings up to £5.

[1] Report of the Public Health Department of Lahore for 1918–20. Lahore. 1921.

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